# hiv/aids

# quarterly epidemiology report

**Washington State ❍ Seattle & King County**

1st Quarter '99

# Washington State/Seattle-King County HIV/AIDS Epidemiology Report

## Summary Tables



## HIV/AIDS Epidemiology and Surveillance News



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## Credits


This is the fifty-second edition of a quarterly report on the epidemiology of HIV and AIDS. Produced as a joint project by Public Health-Seattle and King County and the Washington State Department of Health's HIV/AIDS epidemiology programs, it is funded in part by a Centers for Disease Control and Prevention cooperative agreement for HIV/AIDS surveillance. We wish to thank the health care providers caring for people with HIV/AIDS and the clinics and patients participating in epidemiologic studies. Their cooperation with the public health departments' HIV/AIDS control efforts provides the basis for the data presented in this report. We also wish to acknowledge the outstanding assistance of our staff including Stephen Hitchcock, Linda Oakley and Rusty Myers at Public Health-Seattle King County, and Donna Compton, Mark Charonis, Anna Easton and Laraine Shann at the Washington State Infectious Disease and Reproductive Health Assessment Unit.



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HEALTHY PEOPLE. HEALTHY COMMUNITIES.

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## New in this edition of the HIV/AIDS Epidemiology Report...

You will notice some dramatic changes in this, the 52nd edition of the HIV/AIDS Quarterly Epidemiology Report. The report remains unique among HIV/AIDS publications in that it is jointly produced by the Washington State Department of Health (DOH) and Public Health—Seattle & King County. The federal Centers for Disease Control and Prevention funds data collection activities and supports publication of this report through a cooperative agreement for HIV/AIDS surveillance. *Here's what is new:*

- The stunning new cover design is by Stephen Hitchcock BFA of Public Health—Seattle & King County.
- The new interior look features Bookman Postscript font for the body text and was designed by Stephen Hitchcock and Dr. Sharon Hopkins. Steve has been doing the layout and desk top publishing for this report since 1996 and Sharon has edited this report since its inception in 1986.
- The organization formerly known as the Seattle-King County Department of Public Health has a new name and a new logo. We are now known as Public Health—Seattle & King County (PH-SKC). Our new identity, which is being introduced with a public education campaign promoting the everyday benefits of our department to the people of Seattle and King County, puts public health first!
- Dr. Lennox M. Ryland, who was our DOH collaborator on this report for the past five years, left her position with DOH as of July 1, 1999. We will miss Maggie's crisp writing, sharp editing, and the excellence she brought to all aspects of her post at the IDRH Assessment Unit. We welcome Dr. Chris Spitters as the new IDRH Unit head and look forward to working with him.

Your thoughts and comments on the HIV/AIDS Quarterly Epidemiology Report are always welcome. Please contact me at (206)296-4645 or by e-mail at sharon.hopkins@metrokc.gov.

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## Table 1. Surveillance summary of reported AIDS[1] cases, deaths, and persons living with AIDS - King County, other WA counties, all WA State, U.S.

| | | ADULT/ ADOLESCENT | PEDIATRIC[2] | TOTAL |
|---|---|---|---|---|
| **KING COUNTY** | *Cases reported as of 3/31/99* | | | |
| | New cases reported this quarter | 43 | 0 | 43 |
| | New cases reported year-to-date | 43 | 0 | 43 |
| | Cumulative cases | 5,668 | 14 | 5,682 |
| | Cumulative deaths | 3,429 | 8 | 3,437 |
| | Persons living[3] | 2,239 | 6 | 2,245 |
| **OTHER COUNTIES** | *Cases reported as of 3/31/99* | | | |
| | New cases reported this quarter | 41 | 0 | 41 |
| | New cases reported year-to-date | 41 | 0 | 41 |
| | Cumulative cases | 2,974 | 17 | 2,991 |
| | Cumulative deaths | 1,658 | 10 | 1,668 |
| | Persons living[3] | 1,316 | 7 | 1,323 |
| **WA STATE** | *Cases reported as of 3/31/99* | | | |
| | New cases reported this quarter | 84 | 0 | 84 |
| | New cases reported year-to-date | 84 | 0 | 84 |
| | Cumulative cases | 8,642 | 31 | 8,673 |
| | Cumulative deaths | 5,087 | 18 | 5,105 |
| | Persons living[3] | 3,555 | 13 | 3,568 |
| **U.S.** | *Cases reported as of 12/31/98[4]* | | | |
| | Cumulative cases | 679,739 | 8,461 | 688,200 |
| | Cumulative deaths | 408,624 | 4,952 | 413,576 |
| | Persons living[3] | 271,115 | 3,509 | 274,624 |

[1]AIDS by 1993 surveillance case definition
[2]Age < 13 years at time of AIDS diagnosis
[3]Persons reported with AIDS and not known to have died
[4]Most recent date that complete U.S. statistics are available

## Table 2. Cumulative AIDS case counts and deaths by resident county and AIDSNet region at diagnosis - Reported as of 3/31/99 - WA State

| | | TOTAL CASES | | DEATHS | | PRESUMED LIVING | |
|---|---|---|---|---|---|---|---|
| | | No. | (%)[1] | No. | (%)[2] | No. | (%)[2] |
| **Region 1:** | Adams | 2 | ( 0.0) | 0 | ( 0) | 2 | (100) |
| | Asotin | 13 | ( 0.1) | 5 | ( 38) | 8 | ( 62) |
| | Columbia | 3 | ( 0.0) | 2 | ( 67) | 1 | ( 33) |
| | Ferry | 5 | ( 0.1) | 3 | ( 60) | 2 | ( 40) |
| | Garfield | 0 | ( 0.0) | 0 | ( 0) | 0 | ( 0) |
| | Lincoln | 2 | ( 0.0) | 2 | (100) | 0 | ( 0) |
| | Okanogan | 16 | ( 0.2) | 6 | ( 38) | 10 | ( 63) |
| | Pend Oreille | 8 | ( 0.1) | 4 | ( 50) | 4 | ( 50) |
| | Spokane | 339 | ( 3.9) | 200 | ( 59) | 139 | ( 41) |
| | Stevens | 14 | ( 0.2) | 6 | ( 43) | 8 | ( 57) |
| | Walla Walla | 47 | ( 0.5) | 24 | ( 51) | 23 | ( 49) |
| | Whitman | 7 | ( 0.1) | 4 | ( 57) | 3 | ( 43) |
| | **SUBTOTAL** | **456** | **( 5.3)** | **256** | **( 56)** | **200** | **( 44)** |
| **Region 2:** | Benton | 58 | ( 0.7) | 28 | ( 48) | 30 | ( 52) |
| | Chelan | 29 | ( 0.3) | 19 | ( 66) | 10 | ( 34) |
| | Douglas | 2 | ( 0.0) | 2 | (100) | 0 | ( 0) |
| | Franklin | 17 | ( 0.2) | 8 | ( 47) | 9 | ( 53) |
| | Grant | 24 | ( 0.3) | 18 | ( 75) | 6 | ( 25) |
| | Kittitas | 13 | ( 0.1) | 7 | ( 54) | 6 | ( 46) |
| | Yakima | 116 | ( 1.3) | 59 | ( 51) | 57 | ( 49) |
| | **SUBTOTAL** | **259** | **( 3.0)** | **141** | **( 54)** | **118** | **( 46)** |
| **Region 3:** | Island | 48 | ( 0.6) | 32 | ( 67) | 16 | ( 33) |
| | San Juan | 14 | ( 0.2) | 9 | ( 64) | 5 | ( 36) |
| | Skagit | 42 | ( 0.5) | 27 | ( 64) | 15 | ( 36) |
| | Snohomish | 450 | ( 5.2) | 250 | ( 56) | 200 | ( 44) |
| | Whatcom | 124 | ( 1.4) | 63 | ( 51) | 61 | ( 49) |
| | **SUBTOTAL** | **678** | **( 7.8)** | **381** | **( 56)** | **297** | **( 44)** |
| **Region 4:** | King | 5682 | ( 65.5) | 3437 | ( 60) | 2245 | ( 40) |
| **Region 5:** | Kitsap | 149 | ( 1.7) | 93 | ( 62) | 56 | ( 38) |
| | Pierce | 746 | ( 8.6) | 418 | ( 56) | 328 | ( 44) |
| | **SUBTOTAL** | **895** | **( 10.3)** | **511** | **( 57)** | **384** | **( 43)** |
| **Region 6:** | Clallam | 38 | ( 0.4) | 18 | ( 47) | 20 | ( 53) |
| | Clark | 298 | ( 3.4) | 169 | ( 57) | 129 | ( 43) |
| | Cowlitz | 74 | ( 0.9) | 40 | ( 54) | 34 | ( 46) |
| | Grays Harbor | 36 | ( 0.4) | 20 | ( 56) | 16 | ( 44) |
| | Jefferson | 20 | ( 0.2) | 11 | ( 55) | 9 | ( 45) |
| | Klickitat | 10 | ( 0.1) | 8 | ( 80) | 2 | ( 20) |
| | Lewis | 32 | ( 0.4) | 23 | ( 72) | 9 | ( 28) |
| | Mason | 54 | ( 0.6) | 13 | ( 24) | 41 | ( 76) |
| | Pacific | 11 | ( 0.1) | 8 | ( 73) | 3 | ( 27) |
| | Skamania | 7 | ( 0.1) | 5 | ( 71) | 2 | ( 29) |
| | Thurston | 122 | ( 1.4) | 64 | ( 52) | 58 | ( 48) |
| | Wahkiakum | 1 | ( 0.0) | 0 | ( 0) | 1 | (100) |
| | **SUBTOTAL** | **703** | **( 8.1)** | **379** | **( 54)** | **324** | **( 46)** |
| **TOTAL** | | **8673** | **(100.0)** | **5105** | **( 59)** | **3568** | **( 41)** |

[1] Percent of Washington State cases ( column % )
[2] Percent of individual county's cases ( row % )

## Table 3. Demographic characteristics of cumulative reported AIDS[1] cases - King County, other WA counties, all WA State, U.S.

| | KING COUNTY | | OTHER COUNTIES | | ALL WA STATE | | TOTAL U.S. | |
|---|---|---|---|---|---|---|---|---|
| *Cases reported as of:* | 6/30/99 | | 6/30/99 | | 6/30/99 | | 12/31/98[2] | |
| | No. | (%) | No. | (%) | No. | (%) | No. | (%) |
| **SEX** | | | | | | | | |
| Male | 5,434 | (96) | 2,634 | (88) | 8,068 | (93) | 574,783 | (84) |
| Female | 248 | ( 4) | 357 | (12) | 605 | ( 7) | 113,414 | (16) |
| **AGE GROUP (YRS)** | | | | | | | | |
| < 13 | 14 | (<1) | 17 | ( 1) | 31 | (<1) | 8,461 | (1) |
| 13-19 | 10 | (<1) | 22 | ( 1) | 32 | (<1) | 3,423 | (<1) |
| 20-29 | 970 | (17) | 609 | (20) | 1,579 | (18) | 117,717 | (17) |
| 30-39 | 2,785 | (49) | 1,325 | (44) | 4,110 | (47) | 310,196 | (45) |
| 40-49 | 1,403 | (25) | 708 | (24) | 2,111 | (24) | 176,239 | (26) |
| 50-59 | 397 | ( 7) | 208 | ( 7) | 605 | ( 7) | 52,437 | (8) |
| > 59 | 103 | ( 2) | 102 | ( 3) | 205 | ( 2) | 19,724 | (3) |
| **RACE/ETHNICITY** | | | | | | | | |
| White, not Hispanic | 4,602 | (81) | 2,418 | (81) | 7,020 | (81) | 304,094 | (44) |
| Black, not Hispanic | 561 | (10) | 256 | ( 9) | 817 | ( 9) | 251,408 | (37) |
| Hispanic | 327 | ( 6) | 211 | ( 7) | 538 | ( 6) | 124,841 | (18) |
| Asian/Pacific Islander | 111 | ( 2) | 39 | ( 1) | 150 | ( 2) | 4,974 | (1) |
| American Indian/AK Native | 81 | ( 1) | 67 | ( 2) | 148 | ( 2) | 1,940 | (<1) |
| Unknown | 0 | ( 0) | 0 | ( 0) | 0 | ( 0) | 943 | (<1) |
| **HIV EXPOSURE CATEGORY** | | | | | | | | |
| Male-male sex | 4,345 | (76) | 1,697 | (57) | 6,042 | (70) | 326,051 | (47) |
| Injection drug use (IDU) | 308 | ( 5) | 435 | (15) | 743 | ( 9) | 173,693 | (25) |
| IDU & male-male sex | 575 | (10) | 295 | (10) | 870 | (10) | 43,640 | (6) |
| Heterosexual contact | 170 | ( 3) | 253 | ( 8) | 423 | ( 5) | 66,490 | (10) |
| Hemophilia | 28 | (<1) | 54 | ( 2) | 82 | ( 1) | 5,145 | (1) |
| Transfusion | 51 | ( 1) | 63 | ( 2) | 114 | ( 1) | 8,760 | (1) |
| Mother at risk/has HIV | 13 | (<1) | 14 | (<1) | 27 | (<1) | 7,687 | (1) |
| Undetermined/other[3] | 192 | ( 3) | 180 | ( 6) | 372 | ( 4) | 56,734 | (8) |
| **TOTAL CASES** | **5,682** | | **2,991** | | **8,673** | | **688,200** | |

[1] AIDS by 1993 surveillance case definition
[2] Most recent date that complete U.S. statistics are available
[3] Includes patients for whom exposure information is incomplete (due to death, refusal to be interviewed, or loss to follow-up), patients still under investigation, patients whose only risk was heterosexual contact where the risk of the sexual partner was undetermined, persons exposed to HIV through their occupation, and patients whose mode of exposure remains undetermined

## Table 4A. Cumulative AIDS[1] cases by gender, race/ethnicity, and HIV exposure category - Reported as of 3/31/99 - King County

| EXPOSURE CATEGORY | WHITE[2] No. | (%) | BLACK[2] No. | (%) | HISPANIC No. | (%) | ASIAN/PI[3] No. | (%) | AI/AN[4] No. | (%) | TOTAL No. | (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MALE** | | | | | | | | | | | | |
| Male-male sex | 3,700 | (83) | 291 | (60) | 228 | (73) | 86 | (83) | 40 | (57) | 4,345 | (80) |
| Injection drug use (IDU) | 123 | ( 3) | 72 | (15) | 29 | ( 9) | 3 | ( 3) | 7 | (10) | 234 | ( 4) |
| IDU & male-male sex | 478 | (11) | 48 | (10) | 26 | ( 8) | 4 | ( 4) | 19 | (27) | 575 | (11) |
| Heterosexual contact | 24 | ( 1) | 19 | ( 4) | 8 | ( 3) | 1 | ( 1) | 1 | ( 1) | 53 | ( 1) |
| Hemophilia | 26 | ( 1) | 1 | (<1) | 0 | ( 0) | 1 | ( 1) | 0 | ( 0) | 28 | ( 1) |
| Transfusion | 26 | ( 1) | 2 | (<1) | 3 | ( 1) | 1 | ( 1) | 1 | ( 1) | 33 | ( 1) |
| Mother at risk/has HIV | 3 | (<1) | 3 | ( 1) | 0 | ( 0) | 0 | ( 0) | 0 | ( 0) | 6 | (<1) |
| Undetermined/other | 78 | ( 2) | 53 | (11) | 20 | ( 6) | 7 | ( 7) | 2 | ( 3) | 160 | ( 3) |
| **MALE SUBTOTAL (row %)** | **4,458** | **(82)** | **489** | **( 9)** | **314** | **( 6)** | **103** | **( 2)** | **70** | **( 1)** | **5,434** | **(100)** |
| **FEMALE** | | | | | | | | | | | | |
| Injection drug use (IDU) | 38 | (26) | 28 | (39) | 1 | ( 8) | 0 | ( 0) | 7 | (64) | 74 | (30) |
| Heterosexual contact | 75 | (52) | 27 | (38) | 9 | (69) | 3 | (38) | 3 | (27) | 117 | (47) |
| Hemophilia | 0 | ( 0) | 0 | ( 0) | 0 | ( 0) | 0 | ( 0) | 0 | ( 0) | 0 | ( 0) |
| Transfusion | 13 | ( 9) | 3 | ( 4) | 1 | ( 8) | 1 | (13) | 0 | ( 0) | 18 | ( 7) |
| Mother at risk/has HIV | 3 | ( 2) | 2 | ( 3) | 2 | (15) | 0 | ( 0) | 0 | ( 0) | 7 | ( 3) |
| Undetermined/other | 15 | (10) | 12 | (17) | 0 | ( 0) | 4 | (50) | 1 | ( 9) | 32 | (13) |
| **FEMALE SUBTOTAL (row %)** | **144** | **(58)** | **72** | **(29)** | **13** | **( 5)** | **8** | **( 3)** | **11** | **( 4)** | **248** | **(100)** |
| **TOTAL** | **4,602** | **(81)** | **561** | **(10)** | **327** | **( 6)** | **111** | **( 2)** | **81** | **( 1)** | **5,682** | **(100)** |

## Table 4B. Cumulative AIDS[1] cases by gender, race/ethnicity, and HIV exposure category - Reported as of 3/31/99 - WA State

| EXPOSURE CATEGORY | WHITE[2] No. | (%) | BLACK[2] No. | (%) | HISPANIC No. | (%) | ASIAN/PI[3] No. | (%) | AI/AN[4] No. | (%) | TOTAL No. | (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MALE** | | | | | | | | | | | | |
| Male-male sex | 5,170 | (78) | 387 | (56) | 312 | (64) | 108 | (82) | 65 | (51) | 6,042 | (75) |
| Injection drug use (IDU) | 347 | ( 5) | 117 | (17) | 64 | (13) | 4 | ( 3) | 21 | (17) | 553 | ( 7) |
| IDU & male-male sex | 726 | (11) | 66 | (10) | 43 | ( 9) | 4 | ( 3) | 31 | (24) | 870 | (11) |
| Heterosexual contact | 74 | ( 1) | 33 | ( 5) | 23 | ( 5) | 3 | ( 2) | 4 | ( 3) | 137 | ( 2) |
| Hemophilia | 76 | ( 1) | 1 | (<1) | 1 | (<1) | 1 | ( 1) | 0 | ( 0) | 79 | ( 1) |
| Transfusion | 59 | ( 1) | 3 | (<1) | 5 | ( 1) | 1 | ( 1) | 1 | ( 1) | 69 | ( 1) |
| Mother at risk/has HIV | 6 | (<1) | 5 | ( 1) | 0 | ( 0) | 0 | ( 0) | 1 | ( 1) | 12 | (<1) |
| Undetermined/other | 176 | ( 3) | 74 | (11) | 41 | ( 8) | 11 | ( 8) | 4 | ( 3) | 306 | ( 4) |
| **MALE SUBTOTAL (row %)** | **6,634** | **(82)** | **686** | **( 9)** | **489** | **( 6)** | **132** | **( 2)** | **127** | **( 2)** | **8,068** | **(100)** |
| **FEMALE** | | | | | | | | | | | | |
| Injection drug use (IDU) | 116 | (30) | 54 | (41) | 6 | (12) | 1 | ( 6) | 13 | (62) | 190 | (31) |
| Heterosexual contact | 197 | (51) | 47 | (36) | 30 | (61) | 7 | (39) | 5 | (24) | 286 | (47) |
| Hemophilia | 3 | ( 1) | 0 | ( 0) | 0 | ( 0) | 0 | ( 0) | 0 | ( 0) | 3 | (<1) |
| Transfusion | 31 | ( 8) | 6 | ( 5) | 3 | ( 6) | 3 | (17) | 2 | (10) | 45 | ( 7) |
| Mother at risk/has HIV | 6 | ( 2) | 4 | ( 3) | 4 | ( 8) | 1 | ( 6) | 0 | ( 0) | 15 | ( 2) |
| Undetermined/other | 33 | ( 9) | 20 | (15) | 6 | (12) | 6 | (33) | 1 | ( 5) | 66 | (11) |
| **FEMALE SUBTOTAL (row %)** | **386** | **(64)** | **131** | **(22)** | **49** | **( 8)** | **18** | **( 3)** | **21** | **( 3)** | **605** | **(100)** |
| **TOTAL** | **7,020** | **(81)** | **817** | **( 9)** | **538** | **( 6)** | **150** | **( 2)** | **148** | **( 2)** | **8,673** | **(100)** |

[1]AIDS by 1993 surveillance case definition
[2]And not Hispanic
[3]Asian/Pacific Islander
[4]American Indian/Alaska Native

## Table 5. Cumulative AIDS[1] cases by gender and age at diagnosis Reported as of 3/31/99 - King County and WA State

| | KING COUNTY | | | | WASHINGTON STATE | | | |
|---|---|---|---|---|---|---|---|---|
| | MALE | | FEMALE | | MALE | | FEMALE | |
| AGE (YRS) | No. | (%) | No. | (%) | No. | (%) | No. | (%) |
| < 5 | 5 | (<1) | 5 | ( 2) | 11 | (<1) | 12 | ( 2) |
| 5-12 | 2 | (<1) | 2 | ( 1) | 5 | (<1) | 3 | (<1) |
| 13-19 | 7 | (<1) | 3 | ( 1) | 22 | (<1) | 10 | ( 2) |
| 20-29 | 900 | (17) | 70 | (28) | 1,425 | (18) | 154 | (25) |
| 30-39 | 2,679 | (49) | 106 | (43) | 3,862 | (48) | 248 | (41) |
| 40-49 | 1,366 | (25) | 37 | (15) | 2,000 | (25) | 111 | (18) |
| 50-59 | 382 | ( 7) | 15 | ( 6) | 563 | ( 7) | 42 | ( 7) |
| > 59 | 93 | ( 2) | 10 | ( 4) | 180 | ( 2) | 25 | ( 4) |
| **TOTAL** | **5,434** | **(100)** | **248** | **(100)** | **8,068** | **(100)** | **605** | **(100)** |

[1] AIDS by 1993 surveillance case definition

## Table 6. AIDS[1] cases, deaths, and case-fatality rates by year Reported as of 3/31/99 - King County and WA State

| | KING COUNTY | | | | WASHINGTON STATE | | |
|---|---|---|---|---|---|---|---|
| YEAR OF DIAGNOSIS | CASES | (% TOTAL WA CASES) | DEATHS[2] | CASE-FATALITY RATE (%)[3] | CASES | DEATHS[2] | CASE-FATALITY RATE (%)[3] |
| 1982 | 1 | (100) | 1 | (100) | 1 | 1 | (100) |
| 1983 | 11 | (55) | 11 | (100) | 20 | 20 | (100) |
| 1984 | 60 | (76) | 57 | ( 95) | 79 | 76 | ( 96) |
| 1985 | 104 | (79) | 100 | ( 96) | 131 | 127 | ( 97) |
| 1986 | 186 | (75) | 177 | ( 95) | 249 | 240 | ( 96) |
| 1987 | 274 | (74) | 258 | ( 94) | 370 | 349 | ( 94) |
| 1988 | 352 | (71) | 323 | ( 92) | 496 | 458 | ( 92) |
| 1989 | 460 | (73) | 414 | ( 90) | 627 | 560 | ( 89) |
| 1990 | 519 | (69) | 444 | ( 86) | 756 | 650 | ( 86) |
| 1991 | 563 | (66) | 459 | ( 82) | 855 | 703 | ( 82) |
| 1992 | 620 | (67) | 425 | ( 69) | 923 | 646 | ( 70) |
| 1993 | 647 | (65) | 363 | ( 56) | 998 | 571 | ( 57) |
| 1994 | 540 | (61) | 221 | ( 41) | 888 | 370 | ( 42) |
| 1995 | 502 | (64) | 113 | ( 23) | 784 | 190 | ( 24) |
| 1996 | 406 | (58) | 35 | ( 9) | 695 | 74 | ( 11) |
| 1997 | 277 | (56) | 29 | ( 10) | 491 | 51 | ( 10) |
| 1998[4] | 151 | (52) | 7 | ( 5) | 289 | 19 | ( 7) |
| 1999[4] | 9 | (43) | 0 | ( 0) | 21 | 0 | ( 0) |
| **TOTAL** | **5,682** | **(66)** | **3,437** | **( 60)** | **8,673** | **5,105** | **( 59)** |

[1]AIDS by 1993 surveillance case definition
[2]Number of deaths among persons diagnosed each year
[3]Percent of cases diagnosed in each year whose deaths have been reported to date
[4]Reporting for recent years is incomplete

## Table 7A. AIDS cases by HIV exposure category and year of diagnosis Reported as of 3/31/99 - King County

| | 1995 | | 1996 | | 1997 | | 1998[1] | | 1999[1,2] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | No. | (%) | No. | (%) | No. | (%) | No. | (%) |
| Male-male sex | 353 | (70) | 281 | (69) | 177 | (64) | 94 | (62) | 4 | (44) |
| Injection drug use (IDU) | 47 | ( 9) | 34 | ( 8) | 13 | ( 5) | 19 | (13) | 1 | (11) |
| IDU & male-male sex | 44 | ( 9) | 30 | ( 7) | 30 | (11) | 13 | ( 9) | 1 | (11) |
| Heterosexual contact | 21 | ( 4) | 20 | ( 5) | 15 | ( 5) | 4 | ( 3) | 0 | ( 0) |
| Hemophilia | 1 | (<1) | 3 | ( 1) | 2 | ( 1) | 0 | ( 0) | 0 | ( 0) |
| Transfusion | 1 | (<1) | 0 | ( 0) | 3 | ( 1) | 2 | ( 1) | 0 | ( 0) |
| Mother at risk/has HIV | 1 | (<1) | 3 | ( 1) | 1 | (<1) | 0 | ( 0) | 0 | ( 0) |
| Undetermined/other[3] | 34 | ( 7) | 35 | ( 9) | 36 | (13) | 19 | (13) | 3 | (33) |

## Table 7B. AIDS cases by HIV exposure category and year of diagnosis Reported as of 3/31/99 - Other Counties

| | 1995 | | 1996 | | 1997 | | 1998[1] | | 1999[1,2] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | No. | (%) | No. | (%) | No. | (%) | No. | (%) |
| Male-male sex | 136 | (48) | 144 | (50) | 95 | (44) | 58 | (42) | 4 | (33) |
| Injection drug use (IDU) | 54 | (19) | 49 | (17) | 38 | (18) | 28 | (20) | 4 | (33) |
| IDU & male-male sex | 19 | ( 7) | 28 | (10) | 17 | ( 8) | 10 | ( 7) | 1 | ( 8) |
| Heterosexual contact | 32 | (11) | 44 | (15) | 27 | (13) | 17 | (12) | 0 | ( 0) |
| Hemophilia | 6 | ( 2) | 2 | ( 1) | 4 | ( 2) | 0 | ( 0) | 0 | ( 0) |
| Transfusion | 6 | ( 2) | 4 | ( 1) | 4 | ( 2) | 0 | ( 0) | 0 | ( 0) |
| Mother at risk/has HIV | 3 | ( 1) | 1 | (<1) | 1 | (<1) | 0 | ( 0) | 0 | ( 0) |
| Undetermined/other[3] | 26 | ( 9) | 17 | ( 6) | 28 | (13) | 25 | (18) | 3 | (25) |

## Table 7C. AIDS cases by HIV exposure category and year of diagnosis Reported as of 3/31/99 - WA State

| | 1995 | | 1996 | | 1997 | | 1998[1] | | 1999[1,2] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | No. | (%) | No. | (%) | No. | (%) | No. | (%) |
| Male-male sex | 489 | (62) | 425 | (61) | 272 | (55) | 152 | (53) | 8 | (38) |
| Injection drug use (IDU) | 101 | (13) | 83 | (12) | 51 | (10) | 47 | (16) | 5 | (24) |
| IDU & male-male sex | 63 | ( 8) | 58 | ( 8) | 47 | (10) | 23 | ( 8) | 2 | (10) |
| Heterosexual contact | 53 | ( 7) | 64 | ( 9) | 42 | ( 9) | 21 | ( 7) | 0 | ( 0) |
| Hemophilia | 7 | ( 1) | 5 | ( 1) | 6 | ( 1) | 0 | ( 0) | 0 | ( 0) |
| Transfusion | 7 | ( 1) | 4 | ( 1) | 7 | ( 1) | 2 | ( 1) | 0 | ( 0) |
| Mother at risk/has HIV | 4 | ( 1) | 4 | ( 1) | 2 | (<1) | 0 | ( 0) | 0 | ( 0) |
| Undetermined/other[3] | 60 | ( 8) | 52 | ( 7) | 64 | (13) | 44 | (15) | 6 | (29) |

[1]Reporting for recent years is incomplete

[2]Year to date (cases reported as of 3/31/99)

[3]Includes patients for whom exposure information is incomplete (due to death, refusal to be interviewed, or loss to follow-up), patients still under investigation, patients whose only risk was heterosexual contact where the risk of the sexual partner was undetermined, persons exposed to HIV through their occupation, and patients whose mode of exposure remains undetermined

## Table 8A. AIDS cases by age/gender and year of diagnosis Reported as of 3/31/99 - King County

| | 1995 | | 1996 | | 1997 | | 1998[1] | | 1999[1,2] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | No. | (%) | No. | (%) | No. | (%) | No. | (%) |
| Adult Male Cases | 467 | (93) | 377 | (93) | 254 | (92) | 137 | (91) | 8 | (89) |
| Adult Female Cases | 34 | ( 7) | 26 | ( 6) | 22 | ( 8) | 14 | ( 9) | 1 | (11) |
| Pediatric Cases | 1 | (<1) | 3 | ( 1) | 1 | (<1) | 0 | ( 0) | 0 | ( 0) |

## Table 8B. AIDS cases by age/gender and year of diagnosis Reported as of 3/31/99 - Other counties

| | 1995 | | 1996 | | 1997 | | 1998[1] | | 1999[1,2] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | No. | (%) | No. | (%) | No. | (%) | No. | (%) |
| Adult Male Cases | 231 | (82) | 237 | (82) | 177 | (83) | 118 | (86) | 8 | (67) |
| Adult Female Cases | 48 | (17) | 51 | (18) | 36 | (17) | 20 | (14) | 4 | (33) |
| Pediatric Cases | 3 | ( 1) | 1 | (<1) | 1 | (<1) | 0 | ( 0) | 0 | ( 0) |

## Table 8C. AIDS cases by age/gender and year of diagnosis Reported as of 3/31/99 - WA State

| | 1995 | | 1996 | | 1997 | | 1998[1] | | 1999[1,2] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | No. | (%) | No. | (%) | No. | (%) | No. | (%) |
| Adult Male Cases | 698 | (89) | 614 | (88) | 431 | (88) | 255 | (88) | 16 | (76) |
| Adult Female Cases | 82 | (10) | 77 | (11) | 58 | (12) | 34 | (12) | 5 | (24) |
| Pediatric Cases | 4 | ( 1) | 4 | ( 1) | 2 | (<1) | 0 | ( 0) | 0 | ( 0) |

[1] Reporting for years is incomplete
[2] Year to date (cases reported as of 3/31/99)

## Table 9. Deaths of reported AIDS cases by year of death Reported as of 3/31/99 - King County, Other counties, WA State

| | 1995 | | 1996 | | 1997 | | 1998[1] | | 1999[1,2] | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | (%) | No. | (%) | No. | (%) | No. | (%) | No. | (%) |
| King County | 439 | (68) | 280 | (62) | 102 | (49) | 81 | (61) | 5 | (56) |
| Other Counties | 202 | (32) | 174 | (38) | 106 | (51) | 51 | (39) | 4 | (44) |
| All WA State | 641 | (100) | 454 | (100) | 208 | (100) | 132 | (100) | 9 | (100) |

[1] Reporting for recent years is incomplete
[2] Year to date (deaths reported as of 3/31/99)

## Table 10. Estimated number of persons living with AIDS at year's end King County, Other counties, WA State

| | 1996 | | 1997[1,2] | | 1998[1,2] | |
|---|---|---|---|---|---|---|
| | No. | (%) | No. | (%) | No. | (%) |
| King County | 2,027 | (64) | 2,251 | (64) | 2,406 | (62) |
| Other Counties | 1,142 | (36) | 1,290 | (36) | 1,468 | (38) |
| All WA State | 3,169 | (100) | 3,451 | (100) | 3,874 | (100) |

[1]AIDS cases numbers adjusted for reporting delay through 1998
[2]AIDS deaths for 1997 and 1998 have not been adjusted for reporting delay and therefore may be incomplete

# Timing of HIV Testing Among People with AIDS: SHAS Interview Project Results

Studies showing that early treatment of HIV-infected persons reduces viral loads and improves clinical outcomes have led medical authorities to promote a strategy aimed at treating persons at the earliest stages, i.e., during primary HIV infection.[1,2] Early treatment with antiretroviral drugs can slow the progression to AIDS and death, thereby reducing AIDS morbidity and early mortality in persons whose HIV infection has been diagnosed.[3] Antiretroviral drugs can reduce perinatal transmission of HIV by two-thirds in pregnant women known to be infected if treatment is given during the pregnancy.[4] Furthermore, knowledge of HIV status appears to promote behavior changes that help prevent further transmission of the virus. On an individual level, HIV testing and risk-reduction counseling have been shown to be effective in reducing HIV-related risk behaviors in specific populations, especially among heterosexual couples discordant in HIV status and gay men testing HIV positive.[5]

Late HIV diagnosis, defined here as diagnosis with HIV simultaneously or within 12 months of the diagnosis of AIDS, is common among some sub-populations and particularly among women. Certain sub-groups of men also seem to be prone to late diagnosis, notably those who contracted HIV through heterosexual contact or whose mode of transmission is not known. The majority of SHAS (Supplement to HIV/AIDS Surveillance) respondents who were asked about why they had not tested earlier said they did not do so primarily because they were afraid to find out their HIV status or did not perceive themselves to be at risk.

## Methods

The SHAS Interview Project is a multi-center study sponsored by the Centers for Disease Control and Prevention and conducted in Washington by State Department of Health. SHAS collects behavioral and health services data from people with reportable HIV in 12 sites across the United States. SHAS staff work with health care providers and case managers to recruit people eligible for confidential interviews.

In Washington State, SHAS interviews have been completed with 1,311 people with reportable HIV between January 1, 1991 and December 31, 1998. Of the 2,725 people who were asked to participate in SHAS through 1998, 48% completed interviews, 6% refused to participate, 5% were too ill, 11% had died, and 25% could not be located. Of the 1,311 people who completed interviews, 87% were male and 13% were female. Interviews were conducted in all six AIDSNET regions of the state with 6% from Region 1 (including Spokane County), 4% from Region 2 (which includes Yakima County), 7% from Region 3 (which includes Snohomish County), 65% from Region 4 (King County), 12% from Region 5 (which includes Pierce County), and 5% from Region 6 (which includes Thurston County).

In King County, the SHAS sample was stratified by mode of exposure and race/ethnicity, including a 25% sample of white men whose only reported risk was male-male sex and a 100% sample of men and women with any other mode of exposure, including injection drug use and heterosexual contact. Interviews were also conducted with white MSM who are not part of the stratified sample who self-refer to the study; these respondents became part of a convenience sample. All men of color were included, regardless of risk. Outside of King County, all people with reportable HIV were eligible.

The time between first HIV+ diagnosis and diagnosis with AIDS was calculated by subtracting the respondent's self-reported HIV+ test date from the date of AIDS diagnosis reported to the health department. Respondents who had not yet progressed to AIDS (B1/B2 cases) by December 31, 1998, were not included in this analysis (83 males, 16 females). In addition, people for whom self-reported HIV test date was unknown or superseded AIDS diagnosis (45 males, 10 females) were also excluded from analysis. In 1995, questions were added to the SHAS interview related to previous HIV testing for which results were negative, and, for those who had not tested previously, the primary reason for not testing earlier.

## Results

**Representativeness:** Table 1 outlines information on HIV exposure category and race/ethnicity for SHAS respondents as well as for AIDS cases diagnosed between 1991 and 1998. Because of stratified sampling, men with risk factors other than male-male sex (e.g., injection drug use) are oversampled and slightly overrepresented among respondents. Additionally, a higher proportion of SHAS respondents are women as compared to AIDS cases, and women who inject drugs are overrepresented in the SHAS data. In terms of race/ethnicity, SHAS respondents are representative of people with reportable HIV in Washington State.

**Reasons for HIV testing:** Figure 1 describes the "primary reason" that respondents were tested for HIV by gender. Large proportions of both women (34%) and men (31%) cited "illness" as their primary reason for testing. A slightly higher proportion of men cited being in a "known risk group" (33%) as their primary reason for testing. However, the proportion of women who tested for HIV because they perceived themselves to be at risk was much lower than the proportion of men (8% vs. 33%, respectively). A higher proportion of women than men (21% vs. 9%, respectively) tested for HIV because of contact with a sex partner who was HIV-infected.

The reason most commonly cited for testing by all groups of women was "illness," notably among women with no identified risk (80%) and heterosexual contact cases (33%). Among female IDUs, 27% cited "illness" as their primary reason for testing. A higher proportion of women who acquired their HIV infection through injection drug use perceived themselves to be at risk than women in other risk categories. There were no significant differences between White and Black women in reason for testing: 33% of White women and 35% of Black women cited "illness" as being their primary reason for testing. There were too few women of other racial/ethnic backgrounds to include in this comparison.

For men, those who had male-male sex (whether MSM or MSM/IDU) and those who were hemophiliacs were more likely to perceive themselves to be at risk (36% of MSM, 33% of MSM/IDU, 57% of hemophiliacs). Seventeen percent of men whose HIV exposure category was injection drug use perceived themselves to be at risk. The largest proportions of men who tested for HIV because of illness were injection drug users (37%), those who acquired their HIV infection through heterosexual contact (47%), and those with no identified risk (64%).

Black men were significantly more likely to get HIV tested because of illness (43%) than

**Table 1. Characteristics of SHAS participants and diagnosed AIDS cases in Washington, 1991 – 1998**

| | SHAS Respondents | | AIDS Cases | |
|---|---|---|---|---|
| | Male (n = 1,141) | Female (n = 170) | Male (n = 5,366) | Female (n = 493) |
| **HIV exposure category** | | | | |
| Male-male sex | 770 (67%) | --- | 3,915 (73%) | --- |
| Injection drug use (IDU) | 100 (9%) | 77 (45%) | 436 (8%) | 159 (32%) |
| Male-male sex and IDU | 205 (18%) | --- | 542 (10%) | --- |
| Heterosexual contact | 19 (2%) | 80 (47%) | 122 (2%) | 243 (49%) |
| Blood product exposure | 17 (2%) | 3 (2%) | 70 (1%) | 27 (5%) |
| No identified risk | 28 (2%) | 10 (6%) | 271 (5%) | 53 (11%) |
| **Race/ethnicity*** | | | | |
| White | 896 (79%) | 102 (60%) | 4,286 (80%) | 302 (61%) |
| Black | 112 (10%) | 46 (27%) | 490 (9%) | 114 (23%) |
| Hispanic | 90 (8%) | 12 (7%) | 384 (7%) | 43 (9%) |
| Asian/Pacific Islander | 19 (2%) | 4 (2%) | 99 (2%) | 14 (3%) |
| American Indian/Alaska Native | 22 (2%) | 6 (4%) | 103 (2%) | 19 (4%) |

*Data extracted from case reports. Race/ethnicity for two individuals is unknown.

White men (29%) ($p < .01$) and significantly less likely to perceive themselves to be at risk than White men (35% vs. 19%, respectively, $p < .001$). There were no significant differences in reasons for testing between White men and Hispanic men.

**Late HIV diagnosis:** Thirty-five percent of women interviewed for whom an HIV test date was known were first diagnosed as HIV+ within 0-12 months of their AIDS diagnosis (Figure 2). Of the 51 women diagnosed late, 34 (67%) were diagnosed in or after 1993. Of the 34 women diagnosed since 1993, 29 (57%) were tested because of "illness."

When comparing the demographic/risk profile of women who were diagnosed late and those who were not, there were no significant differences. Women with no identified risk were more likely to have been diagnosed late than women with any other mode of HIV transmission. Fifty-six percent of women with no identified risk were diagnosed late, compared to 39% whose HIV exposure category was heterosexual contact and 29% who were IDUs. Late diagnosis was an issue for 36% of White and Hispanic women as compare to 29% of Black women. In women of other race/ethnicities, 63% were diagnosed late.

Of the 1,013 men interviewed for whom an HIV test date was known, 27% were first diagnosed as HIV+ within 0-12 months of their AIDS diagnosis (Figure 2). Of the 270 men who were diagnosed late, 154 (57%) were diagnosed in 1993 or later.

Late HIV diagnosis was highest among men whose reported HIV exposure category was heterosexual contact or no identified risk (71% and 70%, respectively) and lowest among those whose HIV exposure risk was male-male sex (24%) or male-male sex and injection drug use (24%). Forty-one percent of injection drug users were diagnosed late, which was significantly different than MSM and MSM/IDU ($p < .05$). Late diagnosis was more common among Hispanic (37%) and Black men (35%) than among White men (25%) ($p<.05$).

**Reasons for not testing earlier:** Of the participants who responded to the questions added in 1995 (n = 671), 434 (65%) had not had a negative HIV test prior to their positive test (Table 2). When asked for the primary reason that they had not had an HIV test before, the largest proportion (21%) reported that they were afraid to find out that they were HIV+. Seventeen percent reported that they didn't think they were at risk, 17% reported that they just never thought about it, and 12% reported that they didn't think it could happen to them. Seventeen percent reported "other" reasons, and of these people, the majority tested HIV+ early in the epidemic, at the time that the test first became available.

Small proportions of people cited not wanting to change their behavior (3%), no good treatments (3%), not knowing about HIV (3%), concern about discrimination (2%), concern about confidentiality (1%), and lack of knowledge or money for HIV testing (1%). A higher

**Table 2. Primary reason for delayed HIV testing**

| Reason | Responses N = 434 |
|---|---|
| ➢ Afraid to find out I was HIV+ | 92 (21%) |
| ➢ Didn't think I was at risk | 75 (17%) |
| ➢ I just never thought about it | 75 (17%) |
| ➢ Other (most tested early in epidemic) | 74 (17%) |
| ➢ I didn't think it could happen to me | 52 (12%) |
| ➢ I didn't want to make lifestyle changes (# of partners, sexual practices, etc.) | 15 (3%) |
| ➢ I didn't know about HIV | 15 (3%) |
| ➢ There aren't any good treatments available anyway | 14 (3%) |
| ➢ Concerned about discrimination in employment, insurance, etc. | 10 (2%) |
| ➢ Concerns about confidentiality | 6 (1%) |
| ➢ Other (couldn't afford, didn't know where to go, etc.) | 6 (1%) |

proportion of women than men responded that they didn't think they were at risk (41% vs. 14%, $p < .001$) or that they just never thought about it (24% vs. 14%, not significant). A higher proportion of Black respondents (28%) than White respondents (16%) and Hispanic respondents (17%) cited that they didn't think they were at risk, and a higher proportion of Black respondents (24%) than White respondents (16%) and Hispanic respondents (17%) reported that they just never thought about it. The differences between White and Black respondents related to perception of risk were significant ($p<.01$).

## Discussion

For several reasons, SHAS respondents are not considered representative of all people with reportable HIV in Washington State. Due to sampling methods, women and those who have a history of injection drug use are overrepresented in the respondent population. Since most of the interviewers for the project have been based in Seattle, those diagnosed with AIDS in King County are also overrepresented. Additionally, patient participation can be biased by many factors such as patient death, loss to medical follow-up, lack of provider participation, and geographic limitations of the study. The SHAS Project does, however, provide important perspectives unavailable from other sources.

SHAS Interview Project results show that although a high percentage of both women and men receive HIV testing due to "illness", a higher percentage of men receive testing because they perceive themselves to be at risk. Women appear to be less likely to perceive themselves to be at risk, and are more likely than men to get an HIV test because of exposure to a sexual partner about whose risk they may have been unaware. There are, however, certain groups of men who appear not to perceive themselves to be at risk, including Black men and injection drug users. A limitation of these data is that respondents must select the "primary" reason that they decide to test for HIV, so responses given may not reflect the complexity of this decision.

SHAS data indicate that late diagnosis of HIV is a significant problem, particularly in women as demonstrated by the high percentage (35%) who were diagnosed with AIDS within 0-12 months of their HIV+ test and by the high percentage who were tested because of "illness" (indicative of advanced HIV disease). In men, late diagnosis appears to occur more often in Black men and in injection drug users. Since knowledge of HIV status may promote behavior change, a late diagnosis may represent many missed prevention opportunities. Moreover, with the availability of new therapies, early intervention may mean a longer, healthier life for a person who tests HIV+. For pregnant women, early diagnosis of HIV allows them to participate in medical intervention that has been shown to reduce the chances of transmitting HIV to their babies.

Interview results also indicate that respondents did not test earlier primarily because they were afraid to find out their HIV status or did not perceive themselves to be at risk. As with the question about reason for testing, because respondents are asked for the "primary" reason they did not test earlier, their response may not reflect the complexity of this decision. However, the continued challenge for health care and social service providers and those working in prevention will be to tailor HIV counseling and testing efforts to best reach groups of people who: a) may not see themselves as being at risk for HIV; b) may not be seen by providers as being at risk for HIV; or c) are avoiding testing because of denial, fear, or other factors.

If you would like further information on the SHAS Project, please call Maria Courogen at the Washington State Department of Health, Infectious Disease and Reproductive Health Assessment Unit, (360) 236-3458. If you are eligible to participate in the project or have clients who are eligible, please contact project interviewers Emma Moreno at (206) 464-6108 or Joetta Bell at (206) 464-6615.

❑ *Contributed by Maria Courogen MPH*

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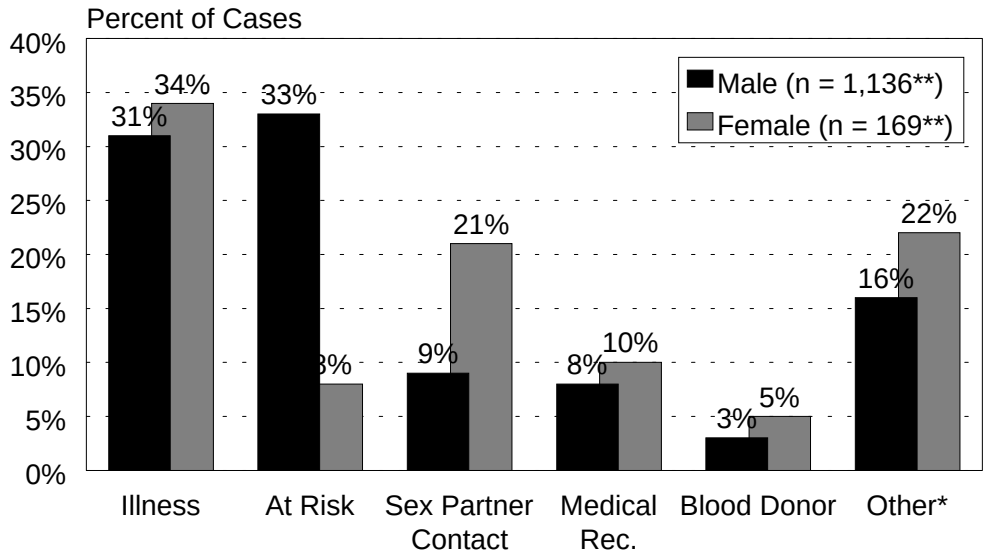
[1]Havlir DV, Richman DD. Viral dynamics or HIV: complications for drug development and therapeutic strategies. **Ann Intern Med** 1996;124:984-994.

[2]Ho DD. Viral counts in HIV infection. **Science** 1996;272:1124-1125.

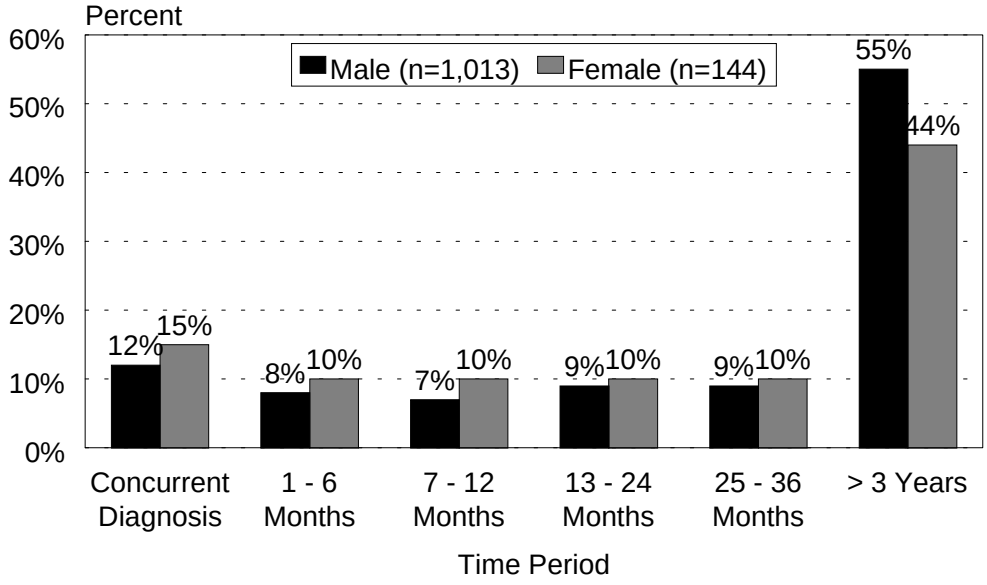
[3]Carpenter CC, Fischl MA, Hammer SM, et al. Antiretroviral therapy for HIV infection in 1997:update recommendations of the International AIDS society-USA panel. **JAMA** 1997;277:1962-1969.

**FIGURE 1. PRIMARY REASON FOR HIV TESTING, BY GENDER**
**SHAS Interview Project, 12/31/98**




*Includes HIV testing for insurance purposes, surgery, in jail, and "other" reasons.
**Persons who did not know why they were tested (n = 6) were deleted from analysis.

**FIGURE 2. LATE DIAGNOSIS OF HIV INFECTION, BY GENDER**
**SHAS Interview Project, 12/31/98**




*Based on self-reported HIV+ diagnosis date and date of diagnosis with AIDS reported to the health department.

[4]Connor E. Reduction of maternal-infant transmission of HIV type 1 with zidovudine treatment. **NEJM** 1994;331:1173-1180.

[5]Higgins DL, et al. Evidence for the effects of HIV antibody counseling and testing on risk behaviors. **JAMA** 1991;266:2419-2429.

**SHAS** staff would like to thank all of the hundreds of men and women living with reportable HIV for their willingness to share their experiences, and the many health care providers and case managers whose assistance in recruiting patients to participate has made this project possible.

# Diffusion of Triple-drug Combination Antiretroviral Therapies: An update from the Seattle ASD Study

Standards of HIV care have changed dramatically over the years. Initial HIV treatment recommendations in the mid-to-late 1980's of monotherapy with zidovudine (AZT, ZDV) were followed in 1995 by additional drugs and dual-drug combinations of the same class (reverse transcriptase inhibitors or RTIs). Now these treatments have now been replaced with a myriad of combination therapy regimens based on CD4 counts, plasma HIV RNA levels, changes in these, and other indicators.

The currently recommended first line of therapy against HIV is generally a triple-drug regimen including two RTIs and either a protease inhibitor (PI) or a non-nuclease reverse transcriptase inhibitor (NNRTI).[1] It is not known whether all groups of HIV-infected persons and their health care providers have taken advantage of and benefited equally from recent advances in therapies. Our objectives for this analysis were to examine temporal trends and patient characteristics related to prescription of triple-drug antiretroviral therapies among persons with HIV infection.

## Methods

The Seattle Adult/Adolescent Spectrum of HIV Related Diseases (ASD) study is part of a multicenter Centers for Disease Control and Prevention-sponsored medical record review study examining persons with HIV infection aged 13 years and greater. In the Seattle study, persons are entered into the study as of an initial medical visit after 1/90 at any of nine participating King County clinics. A one-year retrospective interval is abstracted and follow-up is done thereafter at six-month intervals until death or loss to follow-up (18 months with no contact). Men of color and women are oversampled. Data for this analysis were collected through December, 1998.

The term triple-drug antiretroviral therapy indicates that three or more antiretrovirals were prescribed in a regimen of any length during a study interval. To examine demographic characteristics and factors potentially associated with triple-drug antiretroviral therapy, eligibility required that persons had one or more outpatient visit after 12/95 when the first PI was licensed by the FDA and at least one CD4+ T-lymphocyte count in their medical record.

Multivariate logistic regression was conducted to simultaneously adjust for all significant patient demographic characteristics plus clinic of enrollment, number of outpatient visits, and calendar time of last contact. Odds ratios (OR) presented are estimates of the relative risk of being prescribed triple-drug therapy and indicate that members of a group are less likely to have been prescribed triple-drug therapy if the OR is less than one, and more likely to have been prescribed triple-drug therapy if the OR greater than one. Ninety-five percent confidence intervals demonstrate statistical significance if they exclude the value 1.

## Table 1. Factors associated with triple-drug combination antiretroviral therapy in the Seattle Adult Spectrum of HIV-related Diseases Study, 1996-1998

| | Percent of cohort in this category | Percent prescribed triple-drug therapy | Odds of receiving triple-drug therapy (95% confidence interval) |
|---|---|---|---|
| **Sex** | | | |
| Men | 84 | 48 | 1.0 (reference) |
| Women | 16 | 42 | 1.1 (0.7 – 1.5) |
| **Age** | | | |
| 13-29 years | 18 | 36 | 1.0 (reference) |
| 30-39 years | 49 | 48 | 1.2 (0.9 – 1.6) |
| 40-49 years | 30 | 54 | 1.2 (0.8 – 1.7) |
| 50+ years | 4 | 48 | 0.9 (0.5 – 1.8) |
| **Race/ethnicity** | | | |
| White | 62 | 50 | 1.0 (reference) |
| Black | 21 | 38 | 0.6 (0.5 – 0.9)* |
| Hispanic | 11 | 52 | 0.9 (0.6 – 1.4) |
| Asian | 3 | 48 | 0.8 (0.4 – 1.6) |
| Native American | 3 | 44 | 1.0 (0.5 – 1.8) |
| **Exposure category**** | | | |
| MSM | 55 | 52 | 1.0 (reference) |
| IDU | 13 | 38 | 0.9 (0.6 – 1.3) |
| MSM-IDU | 15 | 39 | 0.8 (0.6 – 1.1) |
| Other | 16 | 45 | 1.1 (0.7 – 1.5) |
| **Clinical class** | | | |
| Asymptomatic (A) | 43 | 39 | 1.0 (reference) |
| Symptomatic non-AIDS (B) | 28 | 53 | 1.7 (1.3 – 2.2)* |
| Clinical AIDS (C) | 29 | 55 | 1.6 (1.2 – 2.2)* |
| **Lowest CD4 in cells/mm$^3$** | | | |
| 200+ | 23 | 42 | 1.0 (reference) |
| <200 | 35 | 50 | 2.6 (2.0 – 3.2)* |
| **Substance use** | | | |
| Alcohol abuse | 29 | 38 | 0.6 (0.5 – 0.8)* |
| Current injection drug use | 6 | 24 | 0.4 (0.2 – 0.6)* |
| Other non-prescription drugs | 25 | 40 | 0.8 (0.6 – 1.1) |
| **Year of last contact** | | | |
| 1996 | 21 | 9 | 1.0 (reference) |
| 1997 | 39 | 49 | 19.1 (11.6 – 31.4)* |
| 1998 | 40 | 66 | 34.4 (20.8 – 56.9)* |
| | | | |
| **TOTAL (n=1485)** | **100** | **47** | **N/A** |

* Denotes statistical significance

** MSM = men who have sex with men; IDU = injection drug user

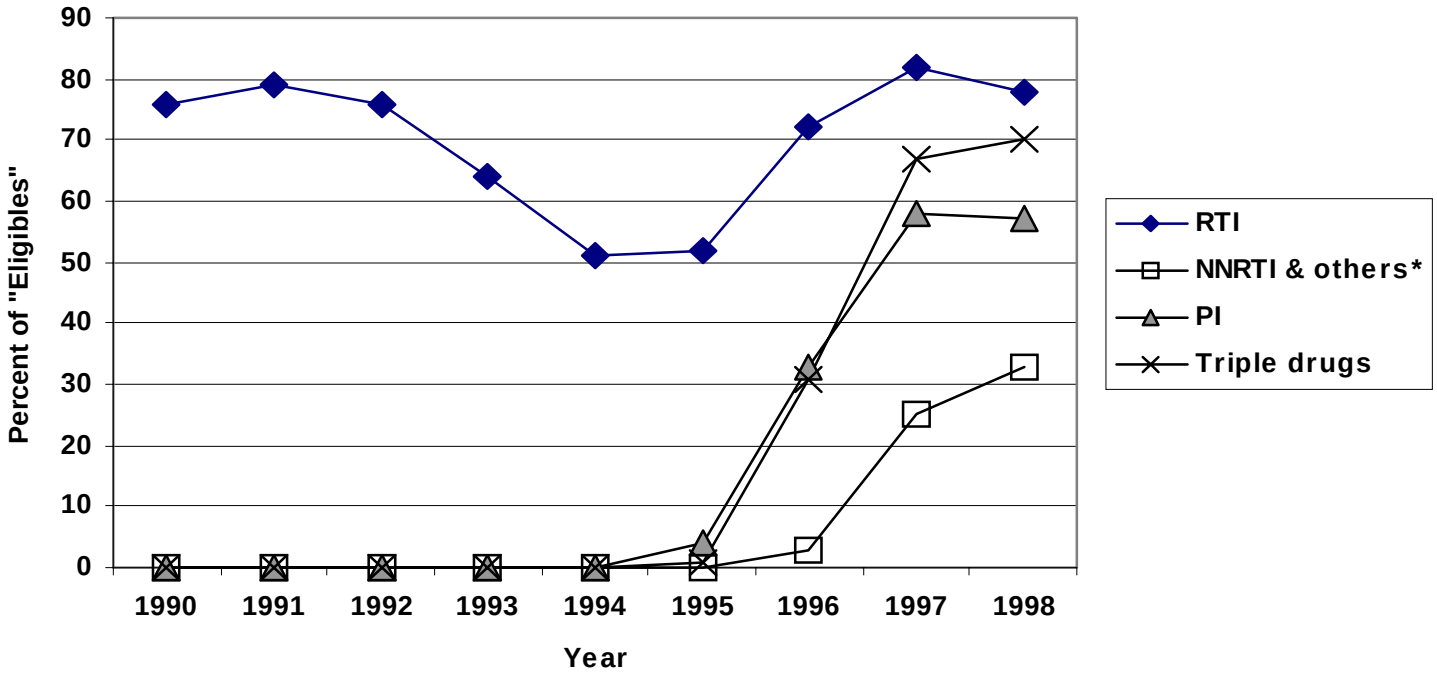
## Results

Patient characteristics and the odds of receiving triple-drug therapy are presented in the accompanying table. The study group was predominantly male (84%), White (62%) and young (persons less than 40 comprised 67%). Men who had sex with men (MSM) were the largest HIV risk group (70% including those MSM who were also drug injectors). After adjustment for the factors listed above plus those designated as statistically significant in the table, triple-drug therapy was significantly less likely to have been prescribed for African Americans (OR=0.6; 95% confidence interval [CI]=0.5-0.9), for current injection drug users (OR =0.4, CI=0.2-0.7), and for alcoholics (OR=0.6, CI=0.5-0.8).

Persons who were severely immunosuppressed with a lowest CD4<200 cells/microliter were more likely to be prescribed triple-drug therapy (OR=2.6, CI = 2.0 – 3.2). There was no increase in triple-drug use for those with CD4s of 200 to 499 relative to CD4>500 (data not shown), nor was there a linear increase of triple-drug use if CD4 was examined in three categories (>500, 200-499, and <200). Similarly, although those with symptomatic HIV disease (clinical AIDS and category B diseases such as thrush) were also more likely to be prescribed triple-drug therapy, multivariate analysis showed no significant increase in triple drug therapy use between those with symptomatic HIV (category B) and more advanced disease (clinical AIDS). Factors associated with prescription of PIs were nearly identical to those for triple-drug therapy (data not shown), but only triple-drug therapy is presented so as to include PI-sparing regimens.

Trends in prescription of antiretrovirals between 1990 and 1998 are presented in Figure 1. For this analysis persons eligible for treatment were defined as those with a CD4<500 or a viral load above 10,000. Data for 1998 should be regarded as preliminary due to smaller numbers (n=239 to date, relative to 699 to 1086 study subjects for other years). The important trends among RTIs include a decline in prescription of ZDV (from 75% in 1990 to 24% in 1998) and increases in lamivudine (3TC/Epivir, to 78% in 1997) and stavudine (D4T/Zerit, to 58% in 1998). Both didanosine (ddI/Videx) and zalcitabine (ddC/Hivid) peaked in 1992 (28% and 17%, respectively); prescription of ddI has recently regained popularity with 21% use in 1998.

**Figure 1. Antiretroviral use by major categories among participants in the Seattle Adult Spectrum of HIV-related Diseases Study, 1990 – 1998**




* Others include the nucleotide analogue, adefovir, and hydroxyurea, which may be used to enhance other antiretrovirals.

Protease inhibitor use increased steeply, initially led by indinivir (Crixivan), peaking with 38% use in 1997. Nelfinivir (Viracept) slightly surpassed indinavir in 1998 with prescriptions noted for 25% of those eligible. Among NNRTIs and other drugs, prescription of nevirapine (Viramune) increased to 30% in 1998 and hydoxyurea has been prescribed to 5% of those eligible in 1998. No substantial amount of delavirdine, abacavir, amprenavir, adefovir, and efavirenz use has been seen to date. Triple drug therapy use rapidly increased from less than one percent in 1995 to 70% of the eligible cohort in 1998.

## Conclusions

The use of triple-drug combination antiretroviral therapy and PIs has recently and rapidly increased in the ASD cohort. This is especially true among persons with the most advanced HIV disease. According to ASD data, however, not all groups of HIV-infected persons have benefited equally from highly active antiretroviral therapies. Notably, we found under use among African Americans, even after adjusting for substance use, disease stage, intensity of health care use, how recently persons were evaluated, and clinic of care.

Due to the common recommendation to initiate antiretroviral use at CD4<500[1], it was surprising that multivariate analysis indicated no linear association for triple-drug therapy with decreasing CD4 counts, nor an association between greater triple-drug therapy and an intermediate stage of HIV-induced immunosuppresion (CD4 200 – 499). Injection drug use was also shown to be negatively associated with triple-drug therapy.

It is not known whether patient characteristics (e.g., lack of knowledge of or unwillingness to use the AIDS prescription drug assistance program, fear and mistrust of new therapies, peer influences, socioeconomic factors), provider characteristics (e.g., provider's preconceived expectations of adherence), or — most likely — some combination of these are responsible for an unequal distribution of triple-drug therapy. Providers are justifiably concerned about development of resistance when a person with HIV infection is highly unlikely to be able to adhere to the strict regimen necessitated by triple-anti-HIV therapies, for example, a mentally ill substance user. However, it is equally important not to make assumptions about a person's ability to adhere, as there have been encouraging studies showing that certain groups of HIV-infected persons, including the unemployed and the homeless, can have good levels of adherence to anti-HIV therapies.[2,3]

*Contributed by Susan Buskin MPH, PhD and Beth Sohlberg MS*

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[1]Centers for Disease Control and Prevention. Report of the NIH panel to define principles of therapy of HIV infection and guidelines for the use of antiretrovirals in HIV-infected adults and adolescents. **MMWR** 1998:47(RR-5):43-65.

[2]Broers B, Morabia A, Hirschel B. A cohort study of drug users' compliance with zidovudine treatment. **Arch Int Med** 1994; 154:1121-7.

[3]Chesney MA, Ikovicz J, et al. Unpublished survey of 76 ACTG patients seeking factors associated with adherence.

# Results of Unlinked HIV Serosurveys at the Seattle-King County STD Clinic, 1988-1998

Centers for Disease Control and Prevention (CDC) has sponsored unlinked anonymous HIV seroprevalence surveys in different sentinel populations in selected metropolitan areas since 1988.[1] The findings described in this report are based on data collected during cross-sectional surveys conducted in the second half of each year between 1988 and 1998 at Public Health-Seattle & King County's (PH-SKC) Sexually Transmitted Diseases (STD) Clinic. Leftover blood specimens collected for clinical purposes were tested for HIV antibodies and linked via an anonymous code to data collected from patient records. The unlinked nature of these surveys avoids participation bias and helps assure a representative sample of the survey population while preserving the anonymity of STD Clinic clients. Data on repeat visits during each annual survey period were not included.

Our findings among eligible surveyed STD patients are summarized below. Results are combined for women and men who have sex with women only (MSW) because of the similar HIV seroprevalence and presented separately for men who have sex with men (MSM). The terms MSW and MSM are used because men are classified, for the purpose of this analysis, according to the gender of their sex partners.

Table 1 shows data on the all STD clients surveyed between 1988 and 1998, including the number of surveyed patients, cumulative HIV prevalence, and the difference (relative risk) in HIV prevalence by demographic and HIV exposure characteristics. The categories with a relative risk (RR) of 1 serve as the reference within each comparison. The 95% confidence intervals (CI) are included to illustrate the magnitude of the observed difference and its statistical significance—if the 95% CI includes 1 then the RR is not statistically significant ($p<0.05$), if the 95% CI does not include 1 then the difference is statistically significant ($p<0.05$).

Table 2 presents trends over time: data from 1988 to 1995 are grouped into two-year periods and data from the last three years are grouped into one period because HIV prevalence among both women/MSW and MSM did not change significantly in those three years. An asterisk indicates a statistically significant trend ($p<0.05$). Table 3 includes data on recent sexual behaviors which have been collected since 1997.

## Results

Between 1989 and 1998, data from a total of 17,604 patient visits including 15,946 women and MSW and 1,658 MSM were collected (Table 1). Of these, 316 (1.8%) were HIV positive. Cumulative HIV prevalence was 0.5% among women and MSW and 14.5% among MSM.

***Women & men who have sex with women only:*** There were 9,815 (61.6%) MSW and 6,131 (38.4%) women (Table 1). Over half (56.7%) were White, 27.5% African American, 5.1% Hispanic, 3.8% Asian/Pacific Islander, 2.0% American Indian/Alaska Native, and 4.8% of another race or ethnicity. About 40% were under 25 years old, 47.3% were 25-39, and 14.0% were 40 or older. The gender distribution remained stable over the years of the survey, while the proportion of African American clients dropped from 32% in 1988-89 to 22% in 1996-98. Seven percent had injected drugs at some time in their life and 4% had injected in the 12 months prior to their visit.

Fifty-four (0.6%) of the men and 21 (0.3%) of the women tested positive for HIV. HIV prevalence declined significantly from 0.9% in 1988-89 to 0.2% in 1996-98 due to a significant decline among men who had higher HIV prevalence in earlier years of the survey than women (Table 2). With the exception of Asian/Pacific Islanders and persons of other race/ethnicity, people of color had significantly higher HIV prevalence than Whites (Table 1). Cumulative HIV prevalence was 1.6% among American Indians/Alaska Natives, 0.9% among Hispanics, 0.8% among Blacks, 0.3% among Whites, and 0.2% among Whites and Asian/Pacific Islanders. African Americans

and Hispanics continued to have higher HIV prevalence than Whites throughout the survey years while none of the STD Clinic clients of Asian/Pacific Islander or American Indian/Alaska Native background tested positive after 1989 and 1991, respectively (Table 2). The declines in HIV prevalence among both Whites and Blacks were borderline significant (p=0.05).

None of the 1,940 female and MSW clients under 20 were HIV positive (Table 2). HIV prevalence increased by age, but after adjusting for injection drug use, only 30-39 year olds had a significantly higher prevalence than clients younger than 25 (Table 1). HIV prevalence declined significantly among 20-39 year olds (Table 2).

Patients who reported ever injecting drugs were five times more likely than patients without an injection drug use history to be infected with HIV (Table 1). HIV prevalence among both those with and without a history of injection drug use declined significantly over the survey years and none of the clients with a history of injection drug use were HIV positive after 1995 (Table 2). Since data collection of injection drug use in the year prior to the STD Clinic visit started in 1993, none of the STD clients who reported this behavior have been HIV positive. Those who reported sex with an IDU had a higher HIV prevalence, but after adjustment for injection drug use, this difference was not statistically significant (Table 1).

Patients diagnosed with gonorrhea were 2.6 times as likely to be infected with HIV compared to patients without gonorrhea infection (Table 1). Although the proportion of patients who were diagnosed with gonorrhea declined from 8.6% in 1989 to 4.6 in 1995, patients with gonorrhea continued to have higher HIV prevalence through 1995 (Table 2).

***Men who have sex with men:*** There were 1,658 male STD patients who reported sex with other men (Table 1). They comprised 14.5% of the male STD Clinic clients, increasing from 9.1% in 1988-89 to 19.0% in 1996-98. The demographic and exposure characteristics were very different from those of the female and MSW STD Clinic population. Almost 80% were White, 8.1% African American, 6.0% Hispanic, 2.2% Asian/Pacific Islander, 1.9% American Indian/Alaska Native, and 4.4% of another race/ethnicity. Between 1988-89 and 1996-98 the proportion of Whites decreased from 83% to 73%. A little over one-fifth were less than 25 years old, 59.3% were 25-39, and 19.0% were 40 or older. A history of ever having injected drugs was reported by 9.5% and 5.1% had injected in the 12 months prior to their visit.

A total of 241 (14.5%) MSM were HIV positive (Table 1) including 18.5% of the men who reported sex with men only and 5.4% of the men who reported sex both with men and women (data not shown). There were no statistically significant differences in HIV prevalence by race/ethnicity, history of injection drug use or sex with an IDU. MSM 25 years of age and older had significantly higher HIV prevalence than those younger than 25 years. During the 11 survey periods, only 1 of the 42 MSM younger than 20 tested HIV positive. MSM diagnosed with gonorrhea were 5 times more likely than those without such a diagnosis to have HIV infection.

HIV prevalence declined significantly from 35.6% in 1988-89 to 5.4% in 1996-98 (Table 2). Although the difference was not statistically significant, HIV prevalence did increase from a low of 3.6% in 1997 to 5.7% in 1998, both lower than any previous years. Prevalence declined among both White and African American MSM, in all age groups 20 and older, and among both MSM with and without a drug injection history. While gonorrhea rates increased in MSM in 1997 (5.1%) and 1998 (7.5%), HIV prevalence dropped significantly among both those with and without a gonorrhea diagnosis.

***Recent sexual behaviors:*** In 1997 information on sexual risk behaviors in the past year was added to the survey (Table 3). About one-quarter of females and MSW reported four or more sexual partners in the past year compared to well over half of MSM. Condom use at last sex increased with increasing number of partners, although almost 60% of those with four or more partners in the past year reported no condom use at last sex. Thirty-eight percent of women/MSW and 35% of MSM who reported sex with an IDU in the past year had also injected drugs in the past year. None of the females/MSW who reported

sex with an HIV-positive person were themselves HIV-positive whereas three of the MSM who reported this behavior were positive. Four percent of women reported sex with a bisexual man and 18.7% of MSM reported sex with a woman in the past year—none of these men were HIV positive.

***HIV testing:*** In addition to information on recent sexual risk behaviors, information on HIV testing was added to the survey in 1997. Among the STD clients surveyed in 1997-98, 93.7% of women/MSW and 84.9% of MSM had HIV testing and counseling as part of their current visit and 73.0% of women/MSW and 85.2% of MSM had a history of a previous HIV test. Fifteen (60%) of the 25 STD Clinic clients who tested positive in the unlinked survey in 1997-98 had an HIV test at the current visit. Ten of these clients had a history of a previous negative test, 3 had tested positive before and two had no prior test reported in their chart. Six of the 10 HIV-positive clients who did not have a test at this visit had a previous positive test and 3 had a previous negative test and may be unaware of their infection—it was unknown if the last client had ever been tested.

## Comments

HIV prevalence has remained low among female and MSW STD Clinic clients in King County and has even decreased as a result of a decrease among MSW over the eleven survey years. Furthermore, none of the surveyed female/MSW STD clients under 20 ever tested HIV positive and nobody with a drug injection history tested positive after 1995. HIV prevalence among MSM STD clients declined sharply between 1988-89 and 1996-98, although a small increase was noted again between 1997 and 1998. Discrepancies in prevalence between different patient groups persisted, however, with MSM having a 27-fold higher HIV prevalence in 1996-98 than females/MSW and African American and Hispanic females/MSW continuing to have higher HIV prevalence than white females/MSW. Information on HIV testing showed very high rates of testing at the PH-SKC STD Clinic.

Compared to the 14 other areas of the country where this survey was conducted in 1997, the PH-SKC STD Clinic ranked lowest in HIV prevalence among MSM (3.6%) following Washington, D.C. (8.2%).[2] The highest HIV prevalence among MSM was in Atlanta (35.6%) and New York City (24.0%). In the West, HIV prevalence among MSM STD Clinic clients was 20.2% in Phoenix, 17.9% in Los Angeles, and 13.9% in Denver. HIV prevalence among non-IDU female STD clients ranged from 0.2% in Seattle and Phoenix to 6.4% in Miami and prevalence among non-IDU MSW clients from 0.1% in Seattle to 5.9% in Washington, D.C.

Declining HIV prevalence trends among MSM have been observed among other STD clinic populations in the US[3] and have been discussed in previous reports from this survey.[4] Because prevalence represents existing infections and does not provide information on when infection occurred, declines may represent a true drop in HIV incidence or reflect a change in the Seattle-King County MSM STD Clinic population. Most likely it is a combination of both factors. Declining trends in AIDS case incidence among MSM observed prior to the introduction of antiretroviral combination therapies in 1996[5] and declining HIV incidence rates among MSM tested at the health department's HIV/AIDS Program Clinic in recent years[6] support the first explanation. MSM with HIV may have lower STD rates than HIV-negative MSM because knowledge of HIV status may lead to safer sex practices. Knowledge of HIV status among Seattle area MSM is likely to be high as evidenced by a 1992 random digit dialed telephone survey of local MSM which showed that 82% had received HIV counseling and testing[7] as well as the high testing rates for STD Clinic clients. It is also possible that MSM with known HIV infection may seek treatment from their own established HIV provider rather than the STD Clinic.

Changes in testing patterns for syphilis and other infections may also influence the results of this survey if persons with HIV infection are differentially excluded from serological testing for other infections. In 1997 and 1998, data from 74% and 62% of new client visits, respectively, were included in the survey. The remaining 26% and 38% did not have blood drawn at their first visit in the survey period. Among those without blood draws in 1998, 84% had notations about HIV status in their chart. HIV prevalence among

MSM was significantly higher among those without blood draws, indicating that the "true" seroprevalence among 1998 STD Clinic MSM clients was closer to 10%.

HIV prevalence among females and MSW clients without blood draws was similar to those with blood draws. It is likely that survey results from some of the previous years similarly underestimated MSM HIV prevalence. However, the relative difference in HIV prevalence over the survey years with the dramatic decline from 1988-89 to 1996-1998 is not likely to be due to differences in testing practices alone. HIV testing results provided by the STD Clinic show a similar decline in HIV prevalence over time with slightly lower prevalence in individual time periods, which would be expected because most HIV-positive patients do not repeat HIV testing (Wil Whittington, personal communication).

Lack of information on HIV seroincidence has been the most important limitation of the STD Clinic serosurvey. However, with the advent of the Less Sensitive (LS) HIV-1 EIA test, which makes it possible to distinguish whether or not infection was acquired within the last 4-5 months, cross-sectional surveys such as this one will be able to provide incidence data.[8] As part of another CDC-funded study, we plan to test stored HIV-positive sera from this survey to assess HIV incidence between 1988 and 1998 in this population. Because STD clinics serve large numbers of persons at increased risk for HIV due to unprotected sex and multiple sexual partners, these clinics continue to be important sites for monitoring emerging patterns and trends in local HIV epidemiology.

For additional information on the King County HIV seroprevalence surveys, please contact Dr. Hanne Thiede at (206) 296-7879 or e-mail at hanne.thiede@metrokc.gov.

❑ *Contributed by Hanne Thiede DVM, MPH, Jan Fields BS and the Survey Team (Nadine Snyder, Stanley Brown, Chung Rikard and Eileen Hough).*

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[1]CDC discontinued funding for the PH-SKC STD Clinic survey in 1997; alternate funding was used to conduct the 1998 survey.

[2]**CDC**. National HIV Prevalence Surveys, 1997 Summary. Atlanta, GA: US Department of Health and Human Services, 1998:1-25.

[3]**CDC**. National HIV serosurveillance summary: results through 1992. Atlanta: US Department of Health and Human Services, November 1993.

[4]**HIV/AIDS Quarterly Epidemiology Report**, 1st Qtr. 1998, 1st Qtr. 1997, and 4th Qtr. 1993.

[5]**HIV/AIDS Estimates and Forecasts**. Washington State Department of Health and Seattle-King County Department of Public Health, October 1996.

[6]**The Quarterly Data Report of the Seattle-King County Department of Public Health HIV/AIDS Program**, 4th Quarter, 1998.

[7]Goldbaum G. HIV testing among men who have sex with men in Seattle. **HIV/AIDS Quarterly Epidemiology Report**, 1st Qtr. 1994.

[8]Janssen RS et al. New Testing Strategy to detect Early HIV-1 Infection for Use in Incidence Estimates and for Clinical and Prevention Purposes. **JAMA** 1998;280:42-48.

## Table 1. HIV Prevalence among Seattle-King Co. STD Clinic Clients, 1988-98

| | Women & men who have sex with women only | | Men who have sex with men | |
|---|---|---|---|---|
| | HIV+/N (%) | RR[1] (95% CI[2]) | HIV+/N (%) | RR[1] (95% CI[2]) |
| **Total[3]** | **75/15,946 (0.5)** | **---** | **241/1,658 (14.5)** | **---** |
| **Sex** | | | | |
| Male | 54/9,815 (0.6) | 1.0 | 241/1,658 (14.5) | N/A |
| Female | 21/6,131 (0.3) | 0.6 (0.4-1.1) | N/A | N/A |
| **Race/Ethnicity[4]** | | | | |
| White | 27/9,009 (0.3) | 1.0 | 190/1,277 (14.9) | 1.0 |
| Black | 34/4,359 (0.8) | 2.6 (1.5-4.5) | 21/133 (15.8) | 1.1 (0.6-1.8) |
| Hispanic | 7/817 (0.9) | 2.9 (1.1-6.9) | 10/99 (10.1) | 0.6 (0.3-1.3) |
| Asian/PI[4] | 1/605 (0.2) | 0.6 (0-3.8) | 6/36 (16.7) | 1.0 (0.4-2.9) |
| AI/AN[4] | 5/318 (1.6) | 5.3 (1.8-14.6) | 7/32 (21.9) | 1.6 (0.6-4.0) |
| Other | 1/770 (0.1) | 0.4 (0-3.0) | 6/72 (8.3) | 0.5 (0.2-1.3) |
| **Age (years)** | | | | |
| <25 | 15/6,119 (0.2) | 1.0 | 29/355 (8.2) | 1.0 |
| 25-29 | 15/3,415 (0.4) | 1.4 (0.7-3.3)[5] | 64/399 (16.0) | 2.2 (1.3-3.5) |
| 30-34 | 18/2,403 (0.7) | 2.1 (1.1-5.1)[5] | 59/347 (17.0) | 2.3 (1.4-3.8) |
| 35-39 | 16/1,688 (0.9) | 2.1 (1.1-5.3)[5] | 38/227 (16.7) | 2.3 (1.3-3.9) |
| ≥40 | 11/2,227 (0.5) | 1.3 (0.6-3.3)[5] | 46/312 (14.7) | 1.9 (1.2-3.3) |
| **IDU ever** | | | | |
| No | 55/14,849 (0.4) | 1.0 | 212/1,501 (14.8) | 1.0 |
| Yes | 20/1,097 (1.8) | 5.0 (2.9-8.6) | 29/157 (18.5) | 1.4 (0.9-2.2) |
| **IDU past year[6]** | | | | |
| No | 25/8,046 (0.3) | 1.0 | 80/996 (8.0) | 1.0 |
| Yes | 0/340 (0) | 0 | 4/53 (7.5) | 0.9 (0.3-2.8) |
| **Sex w/IDU** | | | | |
| No | 63/14,617 (0.4) | 1.0 | 216/1,491 (14.5) | 1.0 |
| Yes | 12/1,329 (0.9) | 0.9 (0.4-2.0)[5] | 25/167 (15.0) | 0.9 (0.5-1.5)[5] |
| **Gonorrhea[7]** | | | | |
| No | 50/13,791 (0.4) | 1.0 | 164/1,463 (11.2) | 1.0 |
| Yes | 6/633 (0.9) | 2.6 (1.0-6.4) | 43/117 (36.8) | 4.6 (3.0-7.1) |

[1]Relative Risk (RR) is calculated by the Odds Ratio
[2]95% CI = 95% Confidence Interval
[3]Individual categories may not add up to total because of missing values
[4]Asian/P I = Asian/Pacific Islander; AI/AN = American Indian/Alaska Native
[5]Adjusted for injection drug use (yes/no)
[6]Data on injection drug use in the 12 months prior to visit were collected between 1993 and 1998
[7]Data on gonorrhea were collected between 1989 and 1998
Data with missing values were excluded

## Table 2. HIV Prevalence and Trends among Seattle-King Co. STD Clinic Clients, 1988-1998

| Characteristics | Women & men who have sex with women only N (%HIV+) | | | | | Men who have sex with men N (%HIV+) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1988-89 | 1990-91 | 1992-93 | 1994-95 | 1996-98 | 1988-89 | 1990-91 | 1992-93 | 1994-95 | 1996-98 |
| **Total** | **3,039 (0.9)** | **3,020 (0.5)** | **3,133 (0.4)** | **2,596 (0.4)** | **4,158 (0.2)*** | **194 (35.6)** | **240 (26.7)** | **342 (14.0)** | **305 (9.5)** | **577 (5.4)*** |
| **Sex** | | | | | | | | | | |
| Male | 1,945 (1.1) | 1,832 (0.6) | 1,986 (0.5) | 1,596 (0.4) | 2,456 (0.2)* | N/A | N/A | N/A | N/A | N/A |
| Female | 1,094 (0.5) | 1,188 (0.3) | 1,147 (0.3) | 999 (0,3) | 1,702 (0.3) | N/A | N/A | N/A | N/A | N/A |
| **Race/ethnicity[1]** | | | | | | | | | | |
| White | 1,679 (0.5) | 1,606 (0.2) | 1,784 (0.4) | 1,500 (0.2) | 2,439 (0.2) | 157 (37.6) | 201 (25.4) | 276 (15.2) | 226 (9.3) | 417 (4.1)* |
| Black | 969 (1.4) | 956 (0.5) | 873 (0.7) | 663 (0.8) | 898 (0.4) | -- | -- | 29 (13.8) | -- | 52 (7.7)* |
| Hispanic | 123 (0.8) | 172 (1.2) | 171 (0.6) | 128 (1.6) | 223 (0.4) | -- | -- | 23 (0) | 21 (4.8) | 36 (8.3) |
| Asian/PI | 95 (1.1) | 92 (0) | 110 (0) | 104 (0) | 204 (0) | -- | -- | -- | -- | -- |
| AI/AK Nat | 59 (1.7) | 65 (6.2) | 58 (0) | 49 (0) | 87 (0) | -- | -- | -- | -- | -- |
| **Age (years)** | | | | | | | | | | |
| <20 | 446 (0) | 441 (0) | 378 (0) | 300 (0) | 375 (0) | -- | -- | -- | -- | -- |
| 20-29 | 1,461 (0.8) | 1,521 (0.7) | 1,504 (0.3) | 1,208 (0.2) | 1,900 (0)* | 82 (28.0) | 107 (22.4) | 150 (12.7) | 124 (10.5) | 249 (5.2)* |
| 30-39 | 790 (1.8) | 738 (0.4) | 802 (1.0) | 674 (0.7) | 1,085 (0.4)* | 84 (40.5) | 87 (27.6) | 113 (14.2) | 97 (9.3) | 193 (7.3)* |
| 40+ | 330 (0.3) | 313 (0.6) | 413 (0.2) | 391 (0.5) | 780 (0.6) | 20 (45.0) | 43 (37.2) | 61 (19.7) | 71 (8.5) | 117 (2.6)* |
| **IDU ever** | | | | | | | | | | |
| No | 2,841 (0.7) | 2,809 (0.2) | 2,911(0.3) | 2,410 (0.4) | 3,977 (0.2)* | 180 (35.0) | 217 (25.3) | 297 (13.8) | 273 (9.2) | 534 (5.2)* |
| Yes | 198 (3.0) | 211 (3.8) | 222 (2.3) | 185 (0.5) | 281 (0)* | -- | 23 (39.1) | 45 (15.6) | 32 (12.5) | 43 (7.0)* |
| **IDU past year[2]** | | | | | | | | | | |
| No | N/A | N/A | 1,565 (0.4) | 2,499 (0.4) | 3,982 (0.2) | N/A | N/A | 158 (14.6) | 289 (9.3) | 549 (5.5)* |
| Yes | N/A | N/A | 67 (0) | 97 (0) | 176 (0) | N/A | N/A | -- | -- | 28 (3.6) |
| **Sex w/IDU ever** | | | | | | | | | | |
| No | 2,924 (0.9) | 2,746 (0.3) | 2,822 (0.4) | 2,375 (0.4) | (0.2)* | 178 (36.5) | 216 (25.9) | 297 (13.8) | 272 (9.6) | 528 (5.3)* |
| Yes | 113 (0.9) | 274 (2.2) | 311 (1.0) | 221 (0) | (0.3)* | -- | 24 (33.3) | 45 (15.6) | 33 (9.1) | 49 (6.1)* |
| **Gonorrhea[3]** | | | | | | | | | | |
| No | 1,387 (0.5) | 2,756 (0.5) | 3,018 (0.4) | 2,526 (0.4) | 4103 (0.2) | 102 (27.5) | 204 (24.5) | 320 (10.9) | 291 (8.6) | 546 (4.8)* |
| Yes | 130 (0.8) | 264 (0.8) | 115 (1.7) | 69 (1.4) | 55 (0) | -- | 36 (38.9) | 22 (59.1) | -- | 31 (16.1)* |

*Indicates statistically significant trend over time at $p<0.05$

[1]Race/ethnicity: other excluded

[2]IDU last year collected 1993-1998

[3]Gonorrhea at this visit collected 1989-1998

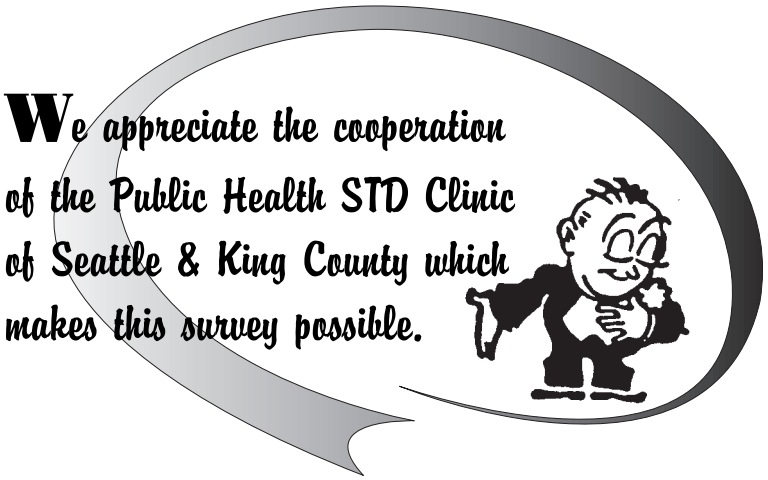
–Data not shown because of small denominator (N < 20) which makes percentages less reliable

Data with missing values were excluded

**Table 3. Sexual Behaviors in Past Year, among Seattle-King Co. STD Clinic Clients, 1997-98**

| Sexual Behaviors | Women & men who have sex with women only N=2,682 | Men who have sex with men N=407 |
|---|---|---|
| | Percent | Percent |
| **Numbers of partners** | | |
| 0 partners | 3.2 | 2.6 |
| 1 partner | 29.5 | 13.8 |
| 2 partners | 29.4 | 15.6 |
| 3 partners | 15.0 | 12.2 |
| 4 or more partners | 22.9 | 55.8 |
| **Condom used at last sex** | | |
| 1 partner past year | 29.8 | 34.8 |
| 2 partners past year | 33.8 | 33.3 |
| 3 partners past year | 40.3 | 45.0 |
| 4 or more partners past year | 42.6 | 42.7 |
| **Sex with IDU** | | |
| Yes | 4.9 | 4.2 |
| **Sex with HIV+** | | |
| Yes | 0.7 | 12.8 |
| **Exchanged $/drugs for sex** | | |
| Yes | 5.7 | 5.2 |
| **Sex with bisexual man (women)** | | |
| Yes | 3.5 | N/A |
| **Sex with women (MSM)** | | |
| Yes | N/A | 18.7 |

Data with missing values were excluded



# Substantial Decrease in Seattle-King County AIDS Deaths over the Last Decade

Surveillance activities conducted by the Public Health-Seattle and King County HIV/AIDS Epidemiology Program show a dramatic decline in deaths among King County AIDS cases between 1987 and 1998. Death rates decreased 94%, from 58.8 per 100 persons with AIDS in 1987 to 3.6 in 1998 (Figure 1). The absolute number of deaths declined as well with only 78 deaths reported in 1998 as compared to an average of 435 deaths per year from 1993 to 1995, 280 deaths in 1996, and 102 in 1997. Similar decreases in number of deaths have been seen in other U.S. cities and states as well as in other industrialized nations (Table 1).[1-11]

Nationwide, deaths among persons with AIDS show a similar pattern of decline. From 1987 to 1994 the number of deaths increased steadily, but since 1995 there has been a decrease in the number of deaths.[11] The number of observed deaths, as reported by CDC, declined 24% in 1996 to 37,880 from 50,110 in 1995.[11] Across the country, decreases ranged from 19% to 33% for the different geographic regions (Table 1).[1] The decline occurred across sex and race categories, although the largest decline was seen in White men.[11] Additionally, CDC has reported that the incidence of opportunistic infections dropped 6% to a rate of 21 per 100,000 person-years in 1996.[11] A decrease in the number of deaths from 1996 to 1997 has also been seen nationwide. The National Center for Health Statistics has estimated that the number of deaths among persons with AIDS decreased 46.4% from 1996 to 1997.[4] A continued decline is expected through 1998.

Preliminary analysis of King County AIDS surveillance data yielded no significant demographic differences between persons with AIDS who died in 1998 and those who were still alive as of 12/31/98 (Table 2). Declines were not limited to any particular gender, race, or mode of exposure, although somewhat higher proportions of injection drug users and men who have sex with men and use injection drugs were found among those who died in 1998 versus those who were alive as of the end of that year. The differences between the two groups were not statistically significant.

**Table 1. Percent decrease in number of deaths of persons with AIDS by geographic area**

| | 1995 to 1996 | 1996 to 1997 |
|---|---|---|
| Boston | 45 | |
| Chicago | 43* | 60* |
| Los Angeles | 20 | |
| Miami | 20 | |
| New York City | 30 | 48 |
| Philadelphia | 24 | |
| San Francisco | 20 | |
| Seattle | 36 | 64 |
| | | |
| Canada | 26 | |
| British Columbia | | 56 |
| Quebec | | 50 |
| France | 25 | |
| Europe | 27 | 32 |
| United Kingdom | | 44 |
| | | |
| United States | 24 | 46 |
| West | 33 | |
| Midwest | 25 | |
| Northeast | 22 | |
| South | 19 | |

*Based on a sample of eight private and two public hospitals

Further analysis of death rates was conducted using AIDS surveillance data to calculate the number of person-years of risk, which were summed by year, for each AIDS case. The number of AIDS deaths per person-year of follow-up at the time of death was used to calculate AIDS-specific mortality rates for each year. AIDS case report data on gender, race, and mode of exposure were used to compare trends in mortality over time. Analysis showed that the different groups' rates have followed fairly similar patterns over the past decade (Figures 2, 3, 4). From 1987 to 1990 the rates decreased in general, although some groups, such as Hispanics, showed an

increase in rates. In the period from 1990 through 1995 the rates tended to stabilize and remain at similar plateaus, with a yearly average of 20-30 deaths per 100 persons with AIDS for all sub-groups. After 1995, rates of death dropped precipitously for all groups.

## Table 2. Characteristics of reported AIDS cases by vital status, King County, 1998

| | Died during 1998 | | Living with AIDS as of 12/31/98 | |
|---|---|---|---|---|
| | No. | (%) | No. | (%) |
| **Gender** | | | | |
| Male | 75 | (96) | 2078 | (94) |
| Female | 3 | (4) | 131 | (6) |
| **Race/Ethnicity** | | | | |
| White | 65 | (84) | 1677 | (76) |
| African-American | 8 | (10) | 272 | (12) |
| Latino/Hispanic | 4 | (5) | 176 | (8) |
| Asian/Pac. Islander | 0 | (0) | 43 | (2) |
| Am. Indian/AK Native | 1 | (1) | 41 | (2) |
| **HIV Exposure Category** | | | | |
| MSM | 54 | (69) | 1611 | (73) |
| IDU | 10 | (13) | 155 | (7) |
| MSM-IDU | 11 | (14) | 211 | (10) |
| Heterosexual contact | 1 | (1) | 94 | (4) |
| Other/not identified | 2 | (3) | 138 | (6) |
| **TOTAL** | **78** | **(100)** | **2209** | **(100)** |

In 1998, rates among men dropped 85% from rates in 1995 and rates among women dropped 89% (Figure 2). Rates of death for Whites, Blacks, and Hispanics were similar from 1995 through 1998 with 84%, 85%, and 88% declines respectively (Figure 3). Rates among Asians and American Indians/Alaskan Natives were unstable due to the small number of people with AIDS in these groups, making it difficult to interpret the results obtained. However, in general their rates tended to increase from 1990 to 1995 and then to decrease from 1995 to 1998, with a 70% decline among Asians and a 94% decline among American Indian/Alaskan Natives.

Following major fluctuations from 1987 through 1990, rates of death for all modes of exposure tended to level off in the early 1990s and then to drop dramatically from 1995 to 1997 (Figure 4). In 1997 rates of death for persons with AIDS were as follows according to mode of exposure: men who have sex with men (MSM), 4.4/100 person-years (p-y); injection drug users (IDU), 4.7/100 p-y; MSM-IDU, 4.5/100 p-y; and heterosexual contact, 4.6/100 p-y. It is of particular interest that the rates of death for IDU and MSM-IDU increased in 1998 to 6.6/100 p-y and 5.2/100 p-y while the rates for MSM and heterosexual contact decreased again. Although these increases were not statistically significant, death rates among IDUs and MSM-IDUs should be watched carefully to see if they continue to increase and, if so, evaluation of the potential causes should be undertaken. The rates of death for those whose HIV was related to hemophilia or blood products and for persons without an identifiable risk were not reported due to small numbers, but generally followed a similar pattern of decline seen in the other risk groups.

It is believed that improved antiretroviral therapies such as multi-drug combinations and protease inhibitors play a major role in the declining number of deaths and death rates. In addition, the use of viral load monitoring to guide treatment and improved prophylaxis for opportunistic infections (OIs), both of which can delay progression to AIDS, may also be factors in reduced mortality.

The HIV/AIDS Epidemiology Program is currently conducting a study that will assess the factors that contribute to HIV-related mortality. In addition to evaluating the effects of antiretroviral treatments and prophylactic treatments for OIs on mortality, the effects of late diagnosis of HIV infection, missed opportunities for OI prophylaxis, and treatment failure among persons with HIV will be assessed. If you have questions about the study or the data presented above, please call Sharon Hopkins, Susan Barkan, or Alexandra Leonetti at 206-296-4645.

❑ *Contributed by Alexandra Leonetti MS and Susan Barkan PhD*

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[1]CDC. Update: Trends in AIDS incidence – United States, 1996. **MMWR** 1997; 46(37): 861-866.

[2]Altman LK. "AIDS deaths drop 48% in New York." The New York Times, February 2, 1999.

[3]Highleyman L. Decline in AIDS-related deaths and hospitalization. **Bulletin of Experimental Treatments for AIDS**, March 1997.

**Figure 1. Rate of Death among Persons Reported with AIDS by Year of Death, King County, 1987-1998**

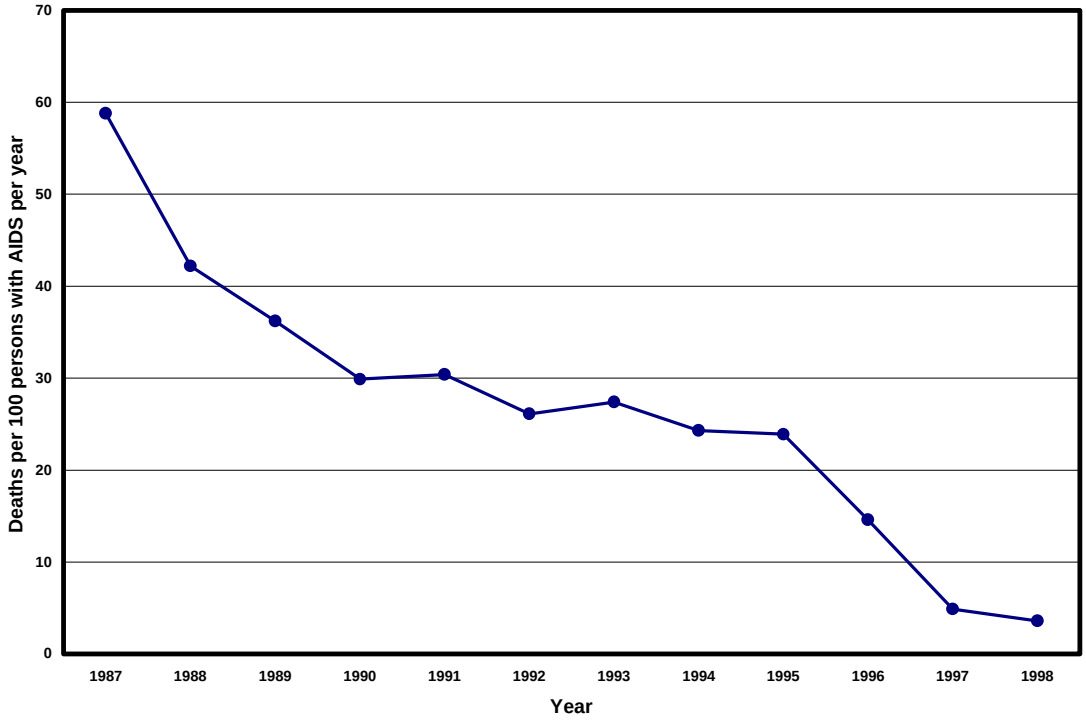



**Figure 2. Rate of Death among Persons Reported with AIDS by Gender and Year of Death, King County, 1987-1998**


[4]Gottlieb S. AIDS deaths fall by nearly one half. **BMJ** 1998; 317(7165): 1032.

[5]"AIDS deaths fall sharply: new treatments credited." Washington Post, February 3, 1998.

[6]"AIDS data offer hope, officials say." Philadelphia Inquirer, April 6, 1999.

[7]"AIDS deaths fall." Toronto Globe and Mail, April 17, 1998.

[8]"AIDS deaths in Britain fell sharply in 1997." Reuters Health Information Services, January 28, 1998.

**Figure 3. Rate of Death among Persons Reported with AIDS by Race and Year of Death, King County, 1987-1998**

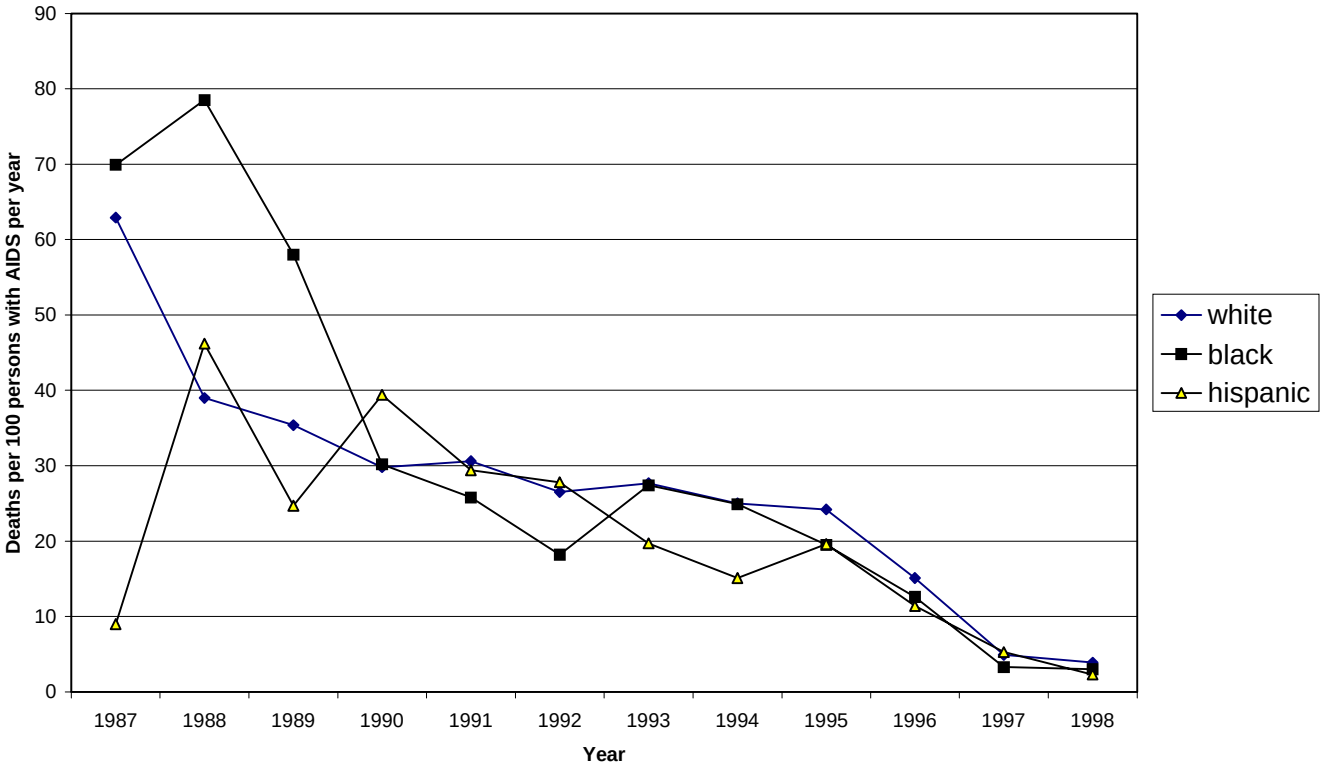
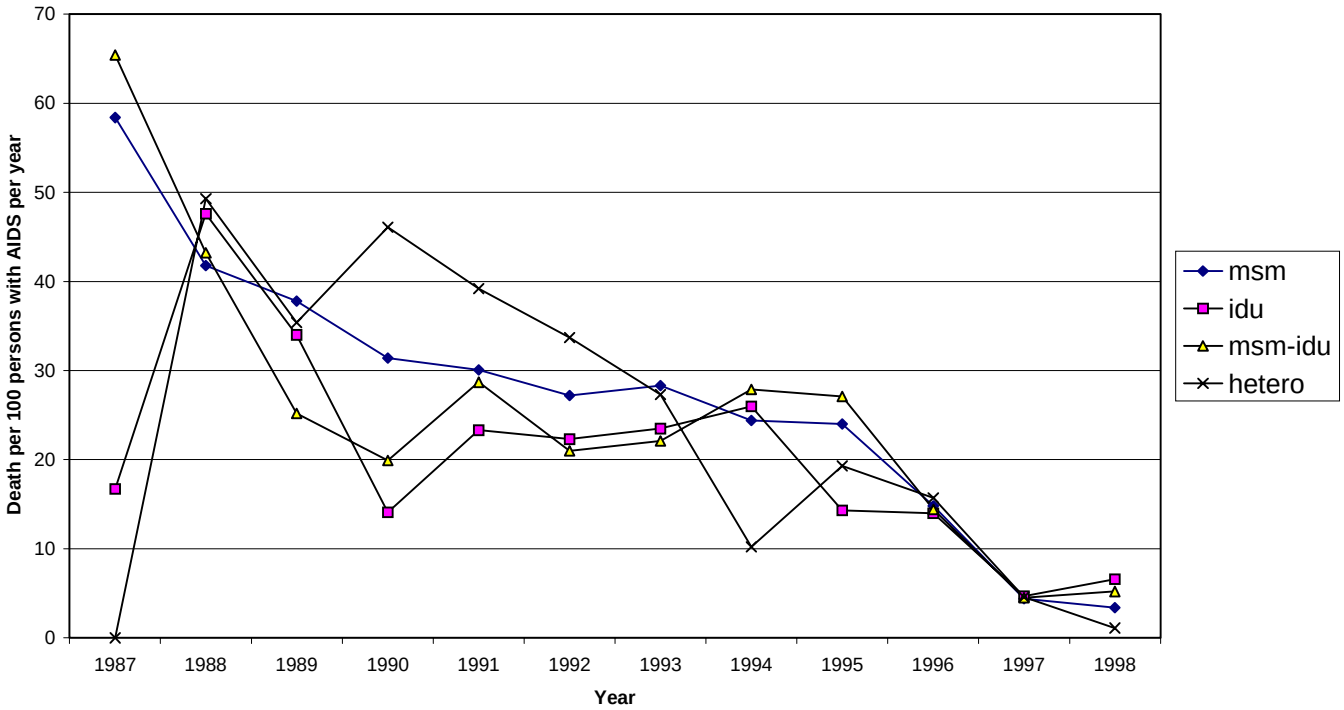



**Figure 4. Rate of Death among Persons Reported with AIDS by Mode of Exposure and Year of Death King County, 1987-1998**




[9]"AIDS cases decline in Europe in 1997." Nando Times Online, April 10, 1998. Via CDC HIV/STD/TB Prevention News Update.

[10]HIV/AIDS mortality continues to fall. **CDR Weekly** 1998; 8(30).

[11]Fleming PL, Ward JW, Karon JM, et al. Declines in AIDS incidence and deaths in the USA: a signal change in the epidemic. **AIDS** 1998; 12(supplement A): S55-S61.

HIV/AIDS program
Public Health Seattle & King County

# HIV/AIDS Program Report: Reducing Barriers to HIV Testing— One Year's Experience with Telephone Results

Since 1993, the number of new AIDS cases in Washington State has declined each year (see the annual reviews of the epidemiology of AIDS in King County and Washington State in the 3rd quarter 1998 edition of this report). The use of more effective antiretroviral treatments and prophylaxis for opportunistic infections have had the effect of delaying the progression of HIV infection to immunologic or clinical AIDS and undoubtedly explain at least part of the trend. In addition, the trend is likely to reflect effects of HIV prevention efforts and the resulting changes in the incidence of HIV infection a decade or more ago.

Among samples tested for HIV by Public Health-Seattle & King County (PH-SKC), both the number of positive tests and the proportion of all tests that are positive have been declining steadily since at least 1989, suggesting that HIV incidence has indeed diminished. This finding is complicated by two observations suggesting that there has also been a change in the HIV testing patterns of persons at risk. First, the number of tests done by the PH-SKC laboratory has declined from nearly 30,000 in 1994 to just 20,000 in 1998. Second, at the same time, surveys and administrative data (registration information) of persons tested at a variety of venues suggest that there is at least as much risky behavior now as five years ago. Thus, the risk persists, but apparently fewer at-risk persons are seeking HIV testing.

There are several possible explanations for these changes in HIV testing patterns.: 1) At-risk individuals may not perceive an urgency to test, given improved treatments; 2) At-risk individuals may be seeking testing from private providers; 3) At-risk individuals may be avoiding testing due to perceived barriers, such as potential loss of confidentiality or difficulty accessing testing; 4) In particular, as concern about HIV diminishes, perceived barriers may become stronger determinants of testing.

To reduce barriers to HIV testing, the HIV/AIDS Program (HAP, formerly the AIDS Prevention Project) of PH-SKC began offering clients telephone results (rather than traditional in-person post-test counseling and disclosure of test results) to selected clients in October, 1997; this pilot service was expanded to all clients in March, 1998. Pretest HIV counseling is always in-person and follows a standard client-centered protocol for all clients. The counselor defers testing altogether if the client is suicidal or homicidal. Telephone results are offered only if the client has adequate social support and agrees to meet with a counselor within a day to get in-person follow-up. Moreover, in-person results are always offered as an alternative to telephone results.

If, during the pretest counseling, the client is offered and accepts telephone results, he/she must call the clinic and confirm his/her identity (by use of an anonymous code) to obtain results. Although telephone results can be a challenge (due to lack of visual clues and the ability of clients to simply hang up), counselors try to provide the same HIV post-test counseling as for clients seen in-person. If the results are positive, the counselor arranges for the client to be seen as soon as possible at the clinic or another mutually agreeable location. Counselors have gone into the field to transport the client to the clinic or to provide on-site counseling when this type of service was indicated.

From March 1998 to February 1999, HAP tested 1776 clients; 1454 (82%) were offered telephone results and 1098 (76%) of these accepted. However, the proportion of seropositive clients who were offered and accepted telephone results was lower than for seronegative clients. (Table 1, p=0.03) This partly reflects counselor decisions not to offer telephone results, but also reflects client self-selection; among the seropositive clients, only 65% of those offered telephone results accepted them.

Clients who were offered and accepted telephone results were more likely than other clients to get their results. Clients not offered telephone results were least likely to get their results (Table 2). This may reflect the selection process—clients not offered telephone results were often deemed by the counselors to be without adequate social support, such as homeless persons. This suggests that persons without social supports may be most in need of access to telephone results.

Among the 45 seropositive clients, 5 (11%) did not get their results. This did not differ by option. Among the 17 seropositive clients who got telephone results, 13 (76%) received follow-up counseling within the following week. Two seropositive clients were from out of state and were advised to seek local services. Two seropositive clients had no further follow-up; their reasons are unknown.

A commercially available home HIV test system has provided telephone results since 1996. Although public health agencies may serve different populations, these agencies and their clients may benefit from providing HIV test results by telephone. Telephone results appear to be a desired, well-accepted, and useful service. More than three-quarters of persons offered telephone results accept them. People accepting telephone results are more likely to get their results and persons who get positive HIV results by telephone generally follow up for in-person counseling.

❑ *Contributed by Gary Goldbaum MD, MPH*

**Table 1. Percent of clients who accepted, declined or were not offered HIV test results by telephone, by HIV status*, Seattle-King County, WA**

| | HIV status | |
|---|---|---|
| **Telephone option** | **HIV + (n=45)** | **HIV – (n=1731)** |
| Offer accepted | 44% | 62% |
| Offer declined | 24% | 20% |
| Not offered | 31% | 18% |

*Differences significant (Chi square p=0.03)

**Table 2. Percent of clients receiving HIV test result, by telephone option*, Seattle-King County, WA**

| | Telephone option | | |
|---|---|---|---|
| **How result received** | **Offer accepted (n=1098)** | **Offer declined (n=356)** | **Not offered (n=322)** |
| By telephone | 88% | 7% | 2% |
| In-person | 2% | 76% | 73% |
| Did not get result | 9% | 17% | 25% |

*Differences significant (Chi square p<.001) for those offered telephone option

# Adult AIDS Clinical Trials Unit Report

Important new issues and questions about the management of HIV infection continue to emerge. There is increasing interest in the long-term outcome of persons with HIV infection treated with combinations of antiretroviral agents. While the local and national trends continue to suggest a decrease in progression to AIDS and longer survival, the complications of treatment are generating concern. The problems that are currently attracting the most attention are body composition (shape) changes and metabolic abnormalities, especially hyperlipidemia.

The body shape changes that have been seen include central fat deposition, including intra-abdominal fat, increases in breast size, and buffalo humps. Loss of fat from the face and extremities has also been described. Hyperlipidemia, including high levels of triglycerides and, less commonly, high LDL and total cholesterol and low HDL cholesterol have also been seen. Preliminary data has linked these conditions to treatment regimens containing HIV protease inhibitors, but some reports also describe these changes in persons not receiving protease inhibitors. If and how these problems are linked to the previous observations of the development of hyperglycemia and diabetes mellites in some patients receiving protease inhibitors is also not clear. The athogenesis, clinical course, and best management strategies are not understood and are actively being investigated.

Even the question of how common these conditions are has not yet been clearly answered. Estimates of the frequency of these conditions in persons receiving protease inhibitor-containing combinations have ranged from 15 to 85%. Some of this variability may be due to the lack of a standard definition for diagnosing these conditions, as well as differences in the patient populations, differences in the drug regimens used and the duration of therapy, and the methods used for diagnosing these problems. These abnormalities have led to concerns about whether they could lead to premature cardiac disease. The (nationwide) Adult AIDS Clinical Trials Group is addressing these issues in several ways. A long-term study of persons participating in randomized studies of antiretroviral therapies, which focuses on clinical outcomes including cardiovascular complications, will be starting this summer.

Other studies being done by the group and at the UW Adult AIDS Clinical Trials Unit (UW ACTU) in Seattle are addressing issues related to body shape changes and metabolic abnormalities. One study is evaluating persons beginning antiretroviral therapy, to compare the outcome in persons receiving three different types of combination regimens - one containing a protease inhibitor (nelfinavir), one containing a non-nucleoside reverse transcriptase inhibitor (efavirenz), and one containing both of these agents. All patients also receive two nucleoside reverse transcriptase inhibitors. This study is doing measurements of body shape, body fat content, and lipids to compare the frequency and time course of these changes in patients assigned by chance to these different treatment strategies.

Another upcoming study is addressing the issue of drug interactions between lipid-lowering agents and three protease inhibitors. Potential drug interactions between some lipid-lowering agents, particularly the class of drugs called statins, and protease inhibitors creates a dilemma about managing persons with HIV who develop hyperlidemia. Some of the statins are metabolized by the cytochrome p450 enzyme system, which is also responsible for metabolism of several protease inhibitors. Increased levels of statins have been associated with rhabdomyolysis, and it is hypothesized that protease inhibitors might interfer with statin metabolism. However, severe hyperlipidemia may also have adverse short and long-term effects.

If an HIV-infected patient has had a successful response to an antiretroviral regimen (e.g. suppression of HIV RNA and

# *UNIVERSITY OF WASHINGTON AIDS CLINICAL TRIALS UNIT*

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## *ANTIRETROVIRAL / IMMUNOLOGICAL STUDIES OPEN FOR ENROLLMENT – MAY/JUNE, 1999*

| TOPIC | TREATMENTS | ELIGIBILITY | LENGTH | MISCELLANEOUS | STUDY # |
|---|---|---|---|---|---|
| Resistance tests (to antiviral drugs). | None | Viral load > 2,000<br>Plan to change current drug regimen **AND** on<br>Stable PI therapy at least 1 month. | 22 weeks | 8 clinic visits total,<br>$25 paid per visit. | 060 |
| Effect of PMPA on viral RNA and CD4 counts. | One dose PMPA or placebo followed by one week of observation.<br>Once daily thereafter, for 4 wks. | No other anti-HIV drugs for 2 weeks prior to entry, and on study.<br>CD4 > 200 & viral load > 10,000. | 9 weeks | Four hospitalizations, $200 compensation each. | 091 |
| Effect of birth control pills or depoprovera on AZT. | None | Any CD4 or viral load<br>Must be on AZT, and<br>Starting Ortho-Novum 1/35 or Depoprovera | 6 weeks | ***Women only.***<br>Four 10-hour visits; $75 per visit | 317 |
| Effect of Interleukin-12(IL-12) on immune function. | IL-12 vs placebo | On at least two ARVs for four weeks before entry<br>CD4 300-500<br>No CMV, MAC | 4 weeks | $200 compensation<br>Must be willing to maintain stable ARVs during study | 325 |
| Effect of Prednisone, with ARV therapy, on viral load and CD4. | Current stable ARV + Prednisone vs.<br>Current stable ARV + Prednisone placebo | CD4 200-600<br>>18 yrs. | Approx. 18 weeks | $20 per visit (6 visits)<br>Reimbursement for sub-studies.<br>Must take bactrim while on study. | 349 |
| Treatments with Protease Inhibitors vs. Protease Inhibitor *sparing* treatments. | Randomized partially blinded trial of six different combination therapies, of 3– 4 drugs each.<br>Combinations may include ddI, d4T, EFZ, NFV, or AZT/3TC. | HIV RNA > 500 copies.<br>No prior treatment for HIV.<br>No treatment for infection/ illness within30 days of entry. | 2 – 3 years | Reimbursement for some substudies<br>Cross-over regimens if virologic failure | 384 |
| Combination therapies for virological "failure" on Nelfinavir . | Randomized open label trial of :<br>RTV / SQVsgc / EFZ / 2 new NRTIs vs.<br>IDV / EFZ / 2 new NRTIs vs.<br>AMP / EFZ / 2 new NRTIs vs.<br>IDV / AMP / EFZ / 2 new NRTIs | HIV RNA >5000 after 16 weeks on NFV<br>>16 week continuous NFV<br>No prior prescription to both drugs of one of the following:<br>AZT + 3TC **OR** d4T + 3TC **OR** d4T + ddI **OR** AZT + ddI. | Approx. 1½ years | Up to $250 compensation for sub-study participation.<br>No prior NNRTI | 400 |
| Effect of hydroxyurea (HU), given with anti-retrovirals, on HIV viral load. | Randomized, partially blinded study of:<br>IDV + ddI + d4T + HU placebo vs.<br>IDV + ddI + d4T + HU vs.<br>IDV + 3TC/AZT (or d4T + 3TC) | HIV RNA < 200 copies/ml.<br>CD4 > 200<br>>13 yrs.<br>Currently on IDV, AZT, or d4T and 3TC (and on regimen for at least 6 consecutive months). | 24 months | Not > 7 days use of any PI other than IDV<br>ddI with d4T | 5025 |

# *UNIVERSITY OF WASHINGTON AIDS CLINICAL TRIALS UNIT*

## *OPPORTUNISTIC DISEASE & OTHER CONDITION STUDIES OPEN FOR ENROLLMENT - MAY/JUNE, 1999*

| CONDITION | TREATMENTS | LENGTH | DESCRIPTION | STUDY # |
|---|---|---|---|---|
| Protease Inhibitor Levels in Tissues. Any CD4 | None | 8 weeks | Study of persons planning to start a protease inhibitor. Blood draws and genital fluid collections done at entry, wk 4, wk 8. 4 spinal taps (lumbar puncture): $100 reimbursement for first two, $125 each for third and fourth (total $450). If CD4 (T4) count <100, brain scan will be done. | 032 |
| Hearing Loss with AZT or ddI | None | 32 weeks | Persons starting AZT and/or ddI (with other antivirals). $20 reimbursed for each of 3 hearing tests. CD4 counts >200 cells/ $mm^3$. Blood draws & urine sample: entry & wk. 16, wk 32. | 047 |
| Cervical dysplasia (Precancerous cervical cells) | Oral Isotretinoin (Accutane®) vs. Observation. | 18+ months | Tests effects of Isotretinoin in HIV+ women with cervical dysplasia. Study meds, tests, and evaluations provided free of charge. $20 reimbursement for each study visit. | 293 |
| AIDS Dementia Complex | Memantine vs. placebo, in addition to concurrent antiviral therapy | 16 weeks | After 16 weeks, there will be 4 weeks off therapy. All subjects will be offered open label memantine for 12 more weeks. | 301 |
| Thrush in past 2 yrs., CD4 count < 150 | Fluconazole | 24 months | Open label study of fluconazole in two long term management strategies: chronic suppressive vs episodic therapy for thrush. | 323 |
| Stopping prophylaxis for PCP (Pneumocystis carinii pneumonia) | None | Approximately 2 ½ years. | An observational study of persons with CD4 increases on antiretrovirals who:<br>• Had prior PCP diagnosis ≥ 6 months ago<br>• **AND** an increase in CD4 count to ≥200 cells, twice, at least 12 weeks apart.<br>Open to persons older than 12 years. Exams and blood draws at 4, 8, and every 8 wks thereafter. $20 for each study visit. | 888 |

increase in CD4 cells), there is often reluctance about changing such therapy, even if it had been associated with hyperlipidemia. Options include changing therapy, although it is unknown if different protease inhibitors are more or less likely to cause the metabolic abnormalities. The other option is to use a lipid-lowering agent(s). A study (planned to start in the early summer) will examine drug interactions between three statins (pravastatin, simvastatin, and atorvastatin) and the protease inhibitor combination of ritonavir and saquinavir and the interaction between pravastatin and nelfinavir. This study will be done in persons without HIV infection, to avoid using a subtherapeutic regimen of antivirals in infected persons.

Patients are being sought for the studies described in the preceding tables. Screening tests, study medications, and laboratory and clinical monitoring that are performed as part of our studies are free of charge for potential participants. The unit does not assume the role of primary care provider for study participants, but coordinates with each patient's primary care provider. Physicians or potential enrollees can call Karen Novak or Margot Perrin at (206)731-3184 for additional information or appointments.

❑ *Contributed by Ann Collier MD*

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*ACTU Web Page:*
**http://weber.u.washington.edu/~actu/**

*ACTU Email:*
**actu@u.washington.edu**

# Pediatric AIDS Clinical Trials Unit Report: Metabolic abnormalities in HIV-1-infected children treated with protease inhibitors

Treatment of HIV-1 infection with combination regimens including potent protease inhibitors (PIs) frequently results in the suppression of HIV-1 plasma RNA levels to below the level of detection.[1,2] Individuals treated with these regimens also achieve a measure of immune reconstitution and experience delayed disease progression.[1] However, as more people are treated with these regimens for longer periods of time, several potentially significant side effects of the regimens have emerged. Metabolic complications such as hyperlipidemia,[3] insulin resistance and diabetes mellitus[4] have been described in adults treated with PIs. Also recently described in adults is a condition characterized by a change in body composition with peripheral lipodystrophy and increased visceral fat deposition.[5] It is unclear whether these abnormalities are a direct side effect of the PI therapy, or whether they result from the suppression of viral replication.

Studies in non-HIV-infected adults have found that adults with excess distribution of fat in the trunkal and abdominal regions have an increased risk for type 2 diabetes, hypertriglyceridemia and premature heart disease. As the lipodystrophy syndrome in HIV-1-infected adults treated with PIs appears to be similar to the syndrome of central obesity, hyperlipidemia and insulin resistance described in non-HIV-infected adults, there is concern individuals who develop this syndrome may be at increased risk for early cardiovascular disease.

While there have been anecdotal reports of an increased incidence of hypertriglyceridemia in children who are receive therapy with a PI, there are no published reports on the development of metabolic abnormalities in children who are treated with PIs. If the syndrome of central obesity, hyperlipidemia and insulin resistance occurs with any frequency in children treated with PI therapy, treatment with PIs could place them at a higher risk for the development of early cardiovascular disease. As the recently published Guidelines for the Use of Antiretroviral

Agents in Pediatric HIV Infection[7] recommend antiretroviral therapy with regimens including protease inhibitors as the preferred treatment of HIV-1 disease in children, it will be important to understand the potential metabolic abnormalities arising from these therapies in order to minimize the long-term complications.

Doctors at Seattle's Children's Hospital and Regional Medical Center Pediatric AIDS Clinical Trials Unit have started a study to begin to understand the metabolic effects of PI therapy in children. In this study, the prevalence of hyperlipidemia and hyperinsulinemia in HIV-1 infected children treated with protease inhibitors compared with those who are not treated with protease inhibitor therapy. In addition, percent and distribution of body fat will be compared in HIV-1 infected children treated and not-treated with PI's. The study will also investigate the metabolic changes that may occur over time in HIV-infected children after beginning PI therapy.

❑ *Contributed by Ann J. Melvin MD and Kathey Mohan ARNP*


[1]Hammer SM, Squires KE, Hughes MD, et al. A controlled trial of two nucleoside analogues plus indinavir in persons with human immunodeficiency virus infection and CD cell counts of 200 per cubic millimeter or less. **NEJM** 1997;337:725-33.

[2]Gulick RM, Mellors JW, Havlir D, et al. Treatment with indinavir, zidovudine and lamivudine in adults with human immunodeficiency virus infection and prior antiretroviral therapy. **NEJM**; 337:734-9.

[3]Henry K. Lipid abnormalities associated with use of protease inhibitors: prevalence, clinical sequelae and treatment. 12th World AIDS Conference, June 28 – July 3, 1998, Geneva, Switzerland. Abstract 12319.

[4]Gavazzi OBG, Bouchard O, Leclerq P, et al. Onset diabetes mellitus associated with protease inhibitor therapy. 12th World AIDS Conference, June 28 – July 3, 1998, Geneva, Switzerland. Abstract 12308.

[5]Miller KD, Mulder J, Sepkowitz KA, et al. Visceral abdominal-fat accumulation associated with use of indinavir. **Lancet** 1998;871-5.

[6]Stampfer MJ, Krauss RM, Ma J, et al. A prospective study of triglyceride level, low-density lipoprotein particle diameter and risk of myocardial infarction. **JAMA** 1996;276:882-8.

[7]Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection. **MMWR** 1998;47:1-44.


| Main Requirements | Study Drug or Topic | Study Overview |
|---|---|---|
| ***Pediatric Antiretrovirals:*** | | |
| **>16 weeks antiretroviral therapy, ages 4 months-17 years** (Closed to accrual) | **d4T/evirapine/ritonavir vs. d4T/3TC/nelfinavir (TID) vs. d4T/nevirapine/nelfinavir (TID) vs.d4T/3TC/nevirapine/ nelfinavir** (ACTG 377) | A phase I/II randomized, multicenter protocol comparing four antiretroviral regimens containing combinations of protease inhibitors, NRTIs and an NNRTI in mildly symptomatic HIV-1-infected children 4 months to 17 years of age. The purpose is to evaluate the ability of these regimens to delay disease progression. |
| **Cohort 1: ≤ 16 years of age and able to swallow pills Cohort 2: suspension Strata 1 ≥ 3 month <2yrs Strata 2 ≥ 2 yrs to ≤ 8 yrs** | **DMP-266 Nelfinavir** (ACTG 382) (Closed to accrual except for cohort 2, strata 1) | Phase 1, open-label pharmacokinetic study of a new non-nucleoside reverse transcriptase inhibitor given once daily in combination with nelfinavir. Concomitant use of nucleoside reverse transcriptase inhibitors is required but not supplied by this protocol. |
| **Children 3-16 years of age and able to swallow capsules. Must be naïve to at least one of the following: stavudine, zidovudine, or ddI** | **Saquinavir soft-gel plus 2 NRTI's of choice vs. Saquinavir soft-gel plus nelfinavir plus one or two NRTI's of choice** (ACTG 397) | This is a phase I study to evaluate the safety and tolerance of 2 saquinavir soft-gel containing treatment arms. Children must have a viral load >10,000 at entry to be eligible. Intensive pharmacokinetics will be obtained from a subset of children randomizing to the saquinavir soft-gel plus nelfinavir arm of the study. Because saquinavir soft gel is not available as a liquid formulation, children must be able to swallow capsules. |
| **Infants aged 1-2 months with documented HIV infection** | **Ritonavir Zidovudine Lamivudine** (ACTG 345) | The purpose of this Phase 1 study of ritonavir plus zidovudine and lamivudine is to determine the pharmacokinetics and dosing of ritonavir in very young children. |

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| ***Perinatal Treatment Studies:*** | | |
| **Pregnant HIV-infected women** | **Nevirapine** (ACTG 316) | Pregnant HIV+ women who are naïve to nevirapine are eligible. During labor and delivery women will be given a single dose of nevirapine or placebo and their infants will receive a single dose of nevirapine between 48-72 hours of age. Women may continue on AZT or other antiretroviral medications, except for nevirapine during their pregnancy. The goal is to determine if nevirapine administered at the time of delivery and to the newborn will further decrease maternal-fetal HIV transmission. |
| **Pregnant HIV-infected women** (Pending) | **Zidovudine, lamivudine, Saquinavir -SGC** (ACTG 386) | This Phase I study of the safety, tolerance and pharmacokinetics of saquinavir-SGC given with zidovudine and lamivudine to HIV-infected women and in their newborns post maternal dosing. Newborns receive only zidovudine and lamivudine; infants will not be dosed with saquinavir. Women are enrolled between 14-32 weeks gestation. Prior treatment with saquinavir is an exclusion and prior treatment with other PIs will be handled case by case. |
| **Pregnant HIV-infected women** (Pending) | **Zidovudine, lamivudine, Nelfinavir** (ACTG 353) | This Phase I study of the safety, tolerance and pharmacokinetics of nelfinavir given with zidovudine and lamivudine to HIV-infected women and their newborns. Newborns will be treated for 6 weeks with zidovudine, lamivudine and nelfinavir. Women are enrolled between 14-32 weeks gestation and must be naïve to all PIs. |
| **Pregnant HIV-infected women** (Pending) | **Zidovudine, lamivudine, ritonavir** (ACTG 354) | This Phase I study of the safety, tolerance and pharmacokinetics of ritonavir given with zidovudine and lamivudine to HIV-infected women and their newborns. Women are enrolled between 14-32 weeks gestation; those currently stable on ritonavir may be enrolled. |
| **Pregnant HIV-infected women** | **Zidovudine, lamivudine, ritonavir (**ACTG 354) | This Phase I study of the safety, tolerance and pharmacokinetics of ritonavir given with zidovudine and lamivudine to HIV-infected women and their newborns. Women are enrolled between 14-32 weeks gestation. Women currently stable on ritonavir may be enrolled in this study. |
| **Pregnant HIV-infected women** (Pending) | **Oral Zidovudine during labor** (ACTG 324) | This is a Phase I study of the pharmacokinetics and tolerance of oral zidovudine given to women during labor and delivery. Women must be greater than 34 weeks gestation at delivery and have received at least 28 days continuous zidovudine treatment. IV zidovudine will be administered if less than 3 doses taken 3 hours apart are not able to be taken before delivery. |
| **Newborn infants of HIV-infected women** | **ALVAC-MN120TMG (ACTG 326)** (Closed to Accrual) | Phase 1/II study of the safety and immunogenicity of ALVAC-MN120TMG vaccine given to infants born to HIV infected mothers. Infants receive the vaccine within 72 hours of birth, and at weeks 4, 8, and 12 of life. |
| ***Opportunistic Infections:*** | | |
| **Asymptomatic or mildly symptomatic HIV infected children aged 1-8 years** | **Varivax (chickenpox vaccine) (ACTG 265)** (Closed to Accrual) | Children who are aged 1-8 years with mildly symptomatic HIV disease who have never had chickenpox are eligible for this study vaccine. Mildly symptomatic children who have had chickenpox within 1 year of study entry are eligible as controls. The purpose is to find out if the licensed chickenpox vaccine is safe and works in children with HIV infection. |
| **Infants born to HIV-infected women** | **Measles Vaccine (ACTG 225)** (Closed to Accrual) | Infants who are 6 months of age and born HIV-infected mothers are eligible; both HIV-infected and uninfected infants may participate. The purpose is to protect young infants from infection with measles. |
| ***Natural History Studies:*** | | |
| **Infants of women who were enrolled in treatment trials during pregnancy; infants and children enrolled in any ACTG treatment or vaccine trial** | **Observation (ACTG 219)** | Open to all infants and children currently or previously participating in HIV treatment protocols, including infants born to women who participated in a trial during pregnancy. The purpose of the study is to determine late effects of HIV therapies and HIV infection in children. |

***Adolescent Health Care Studies:***

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| **Immune reconstitution in adolescents treated with HAART** | **Non-treatment-laboratory evaluation** (ACTG 381) | HIV-infected individuals age 8 to 22 years who have not acquired HIV infection by the perinatal route are eligible. Subjects must have detectable viral loads (defined as plasma HIV-1 RNA levels O.D. ≥ 0.2 by Roche Amplicor) and be either treatment naive or have received only monotherapy with any agent. The primary study objective is to determine if, controlling for baseline viral load, there is a positive correlation between the baseline immunologic status and the virologic and immunologic response to HAART at 1, 2, and 3 years after initiation of treatment. |

***OPENING SOON:***

***Pending Perinatal Treatment Studies:***

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| **Infants born to HIV-infected women** | **Increased calorie formula** (ACTG 247) | This is a randomized, double-blind, controlled study of an increased caloric density infant formula and its effect on growth and nutritional status of HIV-infected children. All infants born to HIV-infected women are eligible for enrollment, however those uninfected will be discontinued from the study. |

***Pending Pediatric Antiretrovirals:***

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| **>16 weeks antiretroviral therapy, ages 4 months-17 years with a viral load >4000** | **ddI/nelfinavir/ritonavir vs d4T/nelfinavir/nevirapine Stratified by prior ZDV/3TC versus d4T/other treatment and age (<24 or >24 months)** (ACTG 403) | A phase I/II randomized, multicenter protocol comparing two antiretroviral regimens containing combinations of protease inhibitors, NRTIs and an NNRTI in mildly symptomatic HIV-1-infected children aged 4 months to 17 years of age. The purpose of this study is to evaluate the ability of these regimens to delay disease progression. |
| **HIV-infected children ages 2-12** | **CD4-IgG2** (ACTG 351) | This is a phase I/II trial of CD4-IgG2 in HIV-infected children aged 2-12 years. Children must be on stable unchanged antiretroviral therapy for 3 months prior to entry and have evidence of severe immunologic suppression. |

# AIDS Vaccine Evaluation Unit Report

## Protocol 203

Protocol 203, our third Phase II study, will enroll 60-100 Seattle-area volunteers. A combined regimen of a canarypox-based HIV vaccine and an envelope protein vaccine will be compared with a canarypox HIV vaccine given alone. The study will focus on the safety of the experimental vaccines and the quality of the immune response elicited by these products.

This study will enroll 390 volunteers nationwide and will also involve volunteers in Haiti, Trinidad and Brazil. An equal number of volunteers will be needed from low-risk and high-risk groups. Prospective volunteers may be referred to David Richart, volunteer recruiter at the AVEU. Active recruitment and screening for this study is underway.

## Other Studies at the AVEU

Other studies with openings for volunteers include a study of individuals with repeated exposures to HIV who remain HIV-seronegative. Volunteers are intensively studied immunologically to determine what factors may be important in evading HIV infection. Prospective volunteers may be referred to Jean Lang, (206)667-2398.

Another AVEU-associated study seeks people with Hepatitis C for a study of the immune response to Hepatitis C virus. Prospective volunteers and interested clinicians may contact Marnie Elizaga, MD (206)667-2342.

❑ *Contributed by Marnie Elizaga MD*


**AIDS Vaccine Evaluation Unit**

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Volunteers Needed

Must be 18-60 years of age, healthy, HIV-negative, and available for 18 months to two years.
Please call (206)667-2300 for more information.